

8 September Preview

Rapid Science Synthesis*

Questions **A, C, D, E** - Emissions: **Ronald Brown Data**

- **HVROC 2006 vs. 2000**
- **Oil Platform Emissions**

Questions **F, K** - VOC vs. NO_x Sensitive Photochemistry

- **Observation based analysis - 2006 RHB vs. 2000 Electra**

Question **J** - Performance of O₃ and PM_{2.5} forecast models
(Jim Wilczak)

Question **B** - Mixed Layer Heights: **NOAA Twin Otter Data** (Mike Hardesty)

*<http://esrl.noaa.gov/csd/2006/rss/>

8 September Preview Rapid Science Synthesis*

Questions **A, C, D, E** - Emissions: **Ronald Brown**

- **HVROC 2006 vs. 2000**
- **Oil Platform Emissions**

Questions **F, K** - VOC vs. NO_x Sensitive Photochemistry

- **Observation based analysis 2006 vs. 2000 Electra**

Question **B** - Mixed Layer Height **NOAA Twin Otter
Data** (Mike Hanley or ?)

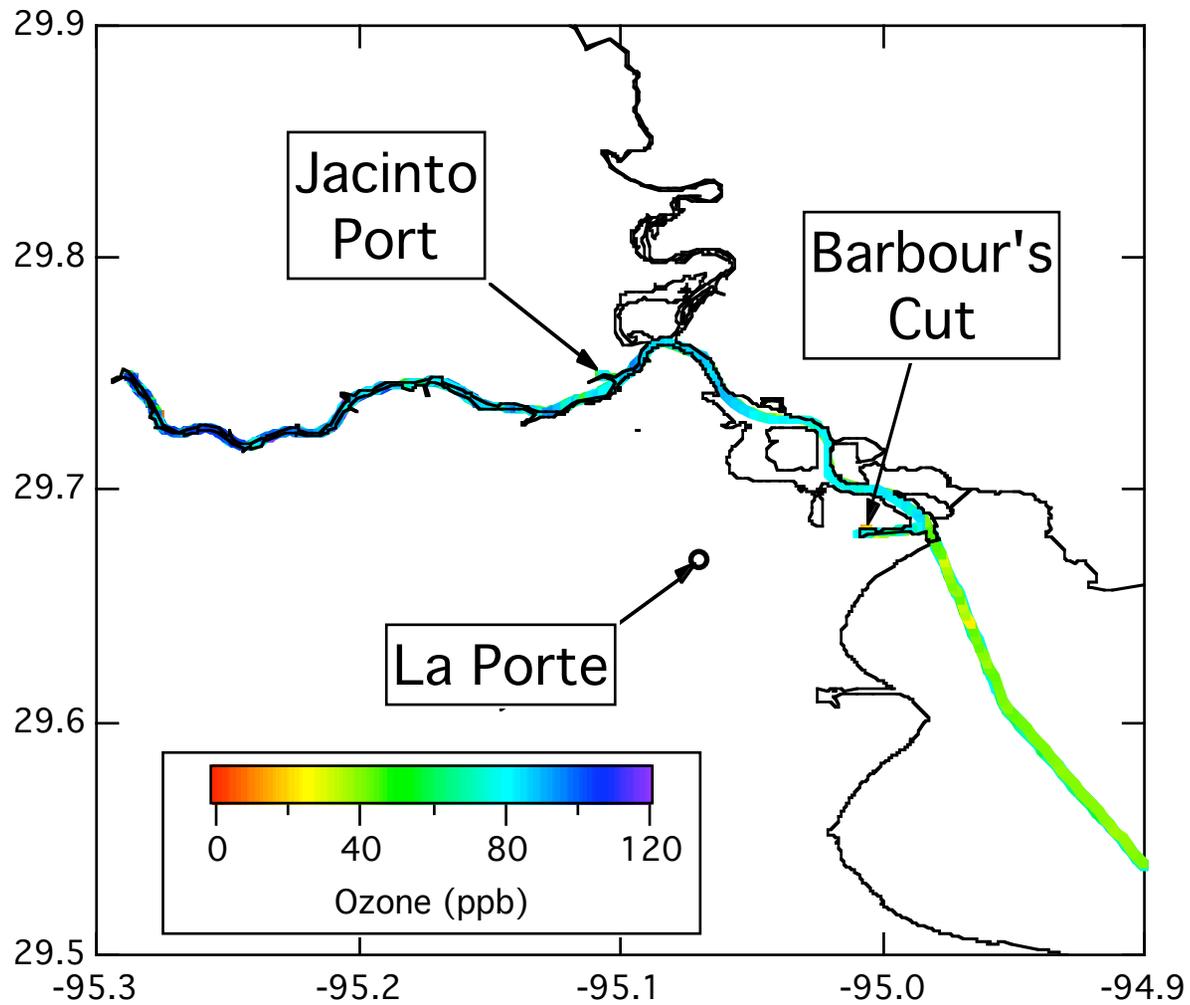
Question **J** - Performance of O₃ and PM_{2.5} forecast models
(Jim Wilcox)

**Preliminary Data & Analysis
Do Not Cite or Distribute!!!!**

*<http://esrl.noaa.gov/csd/2006/rss/>

Questions A, C, D, E - Emissions: **Ronald Brown Data**

- **HVROC 2006 vs. 2000 (Bill Kuster)**



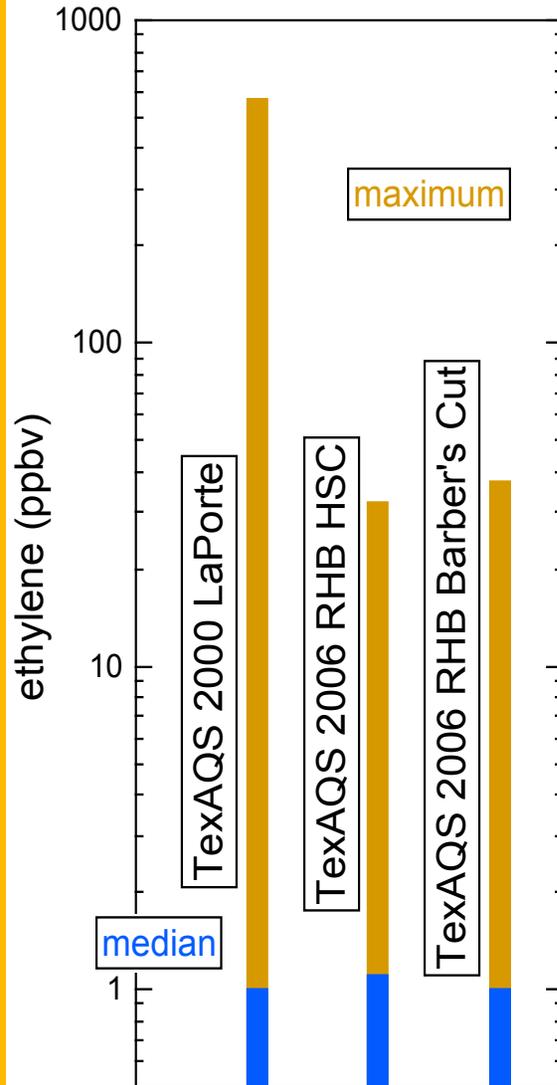
Questions **A, C, D, E** - Emissions: **Ronald Brown Data**

- **HVROC 2006 vs. 2000** (Bill Kuster, Jessica Gilman)

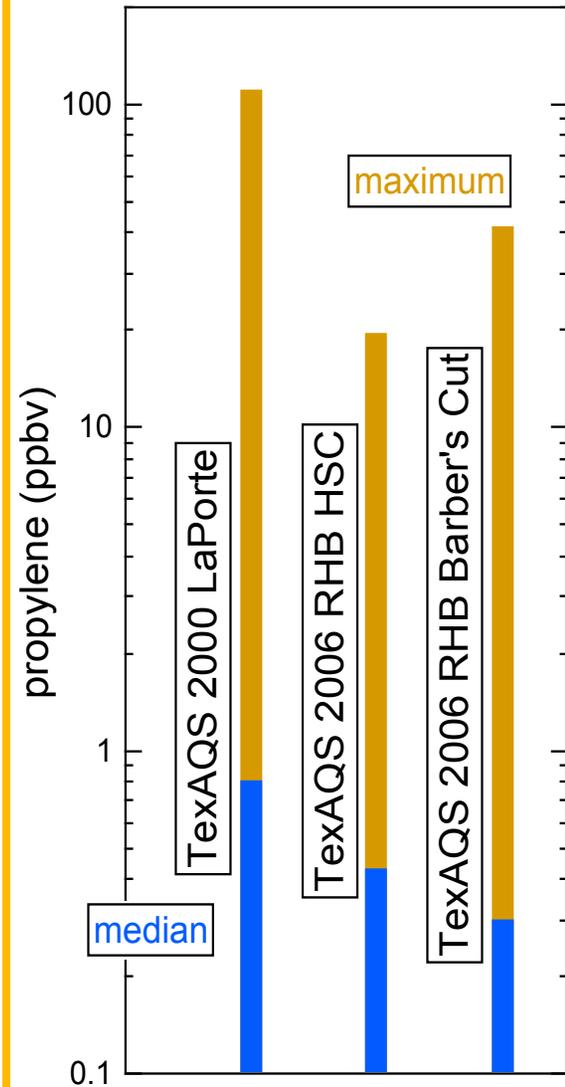
Significant change
in emissions?

High variability
makes significant
comparison
difficult

GC-MS 5 min
Avg. data

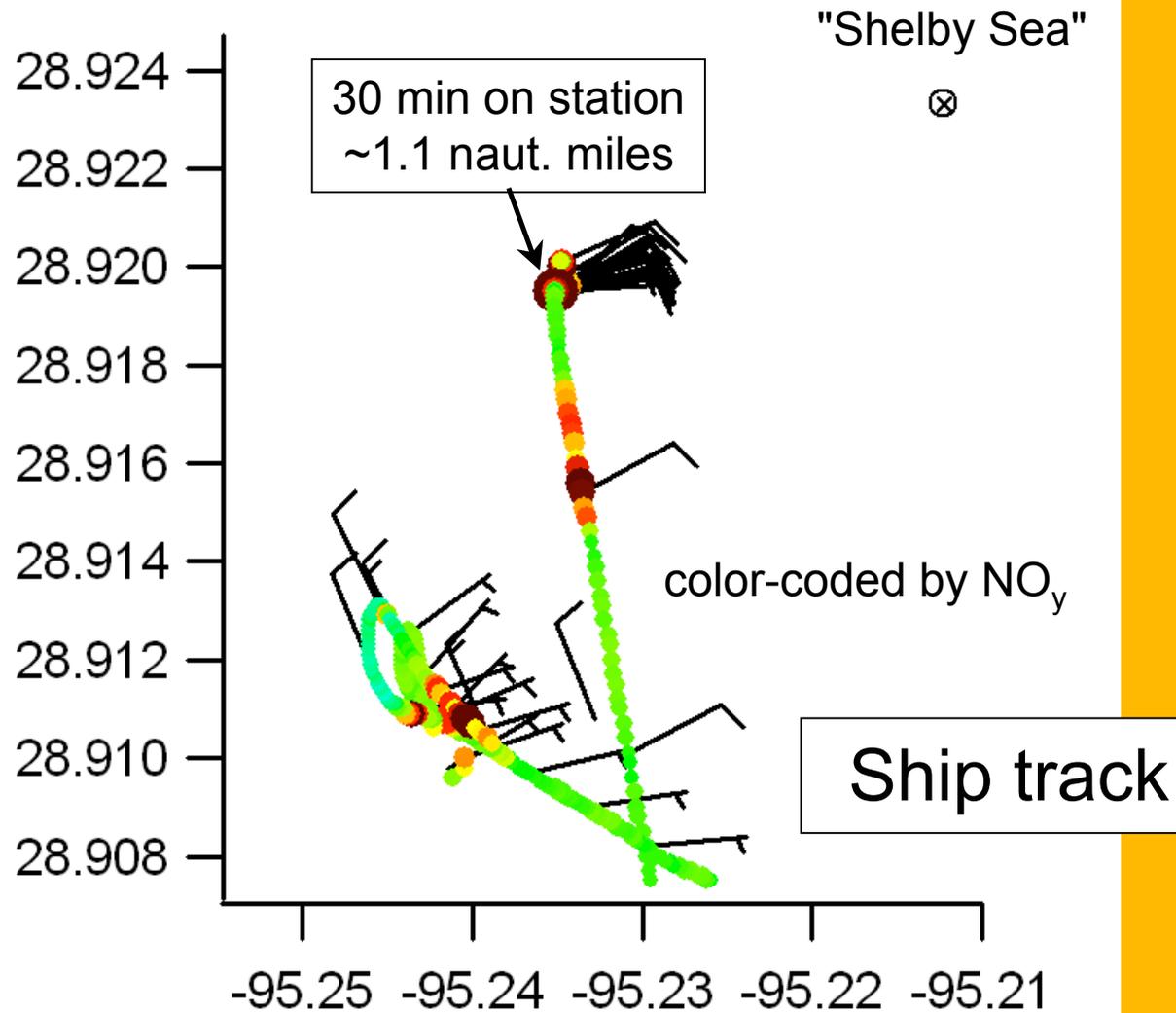


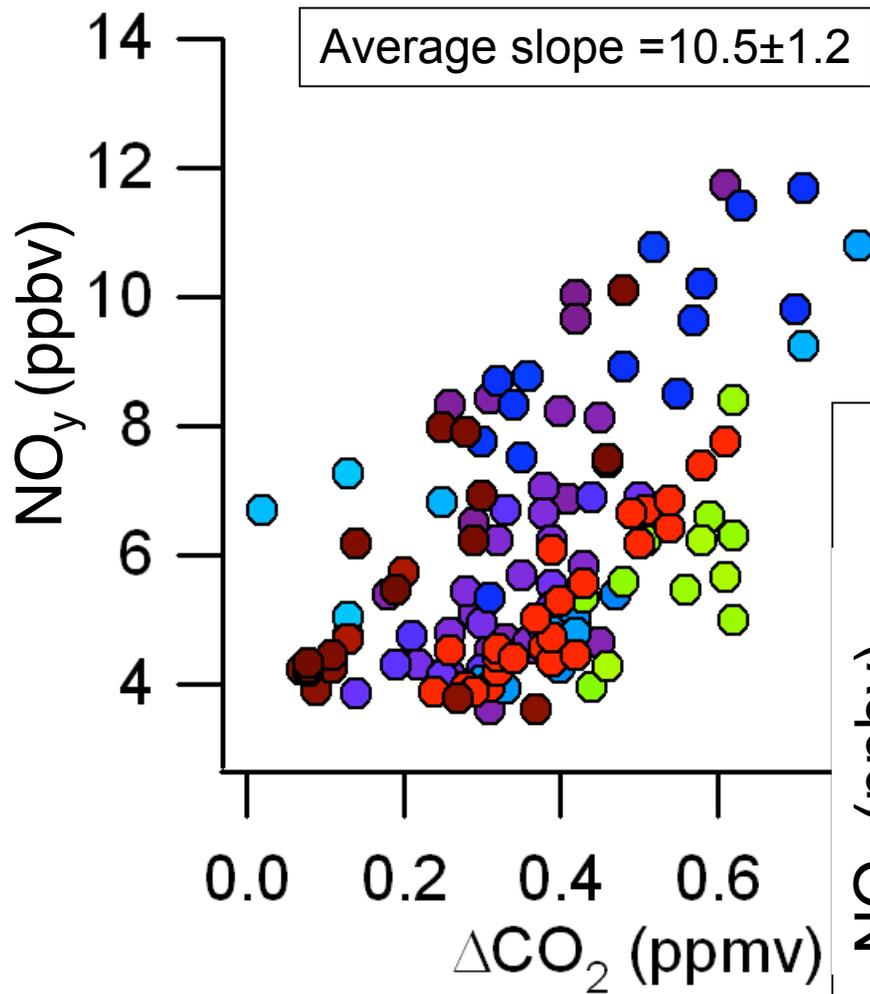
Sample numbers → 1034 110 320



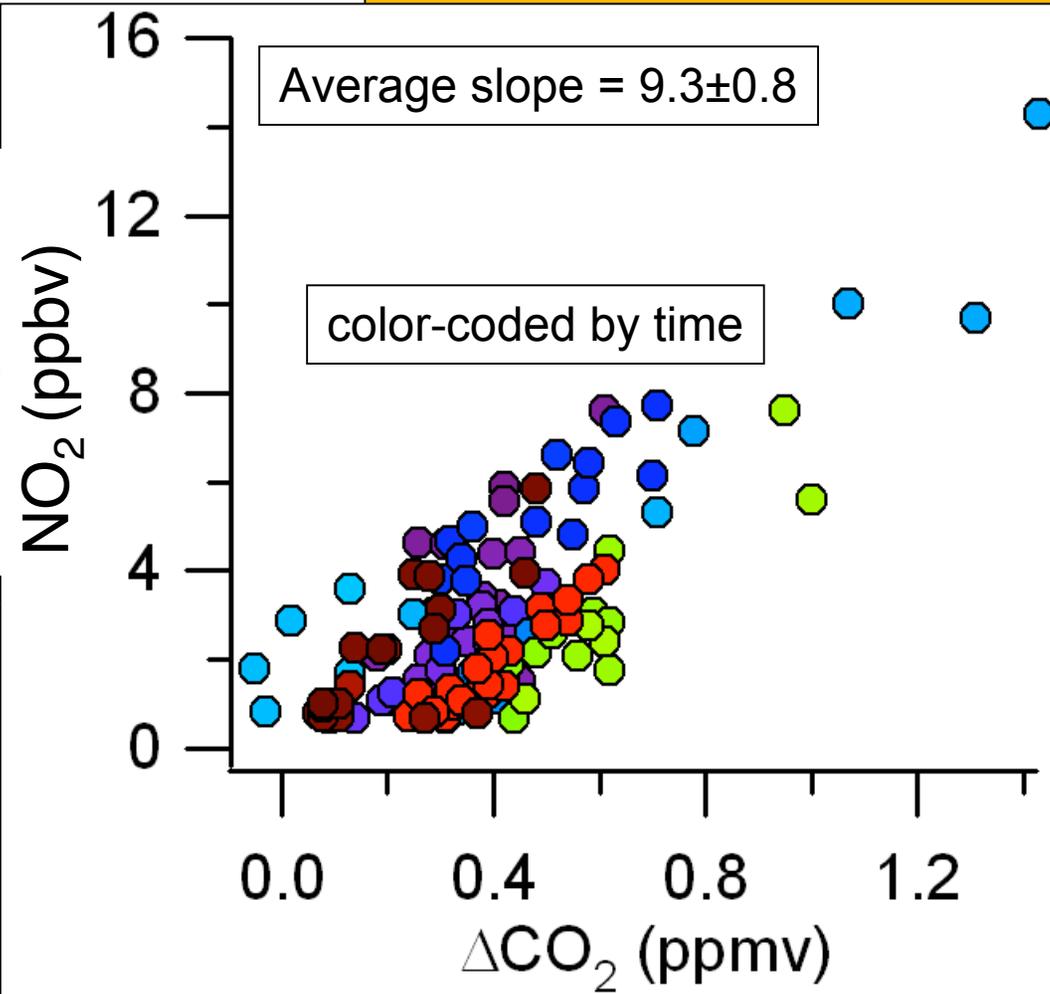
Questions A, C, D, E - Emissions: **Ronald Brown Data**

- **Oil Platform Emissions** (Hans D. Osthoff)

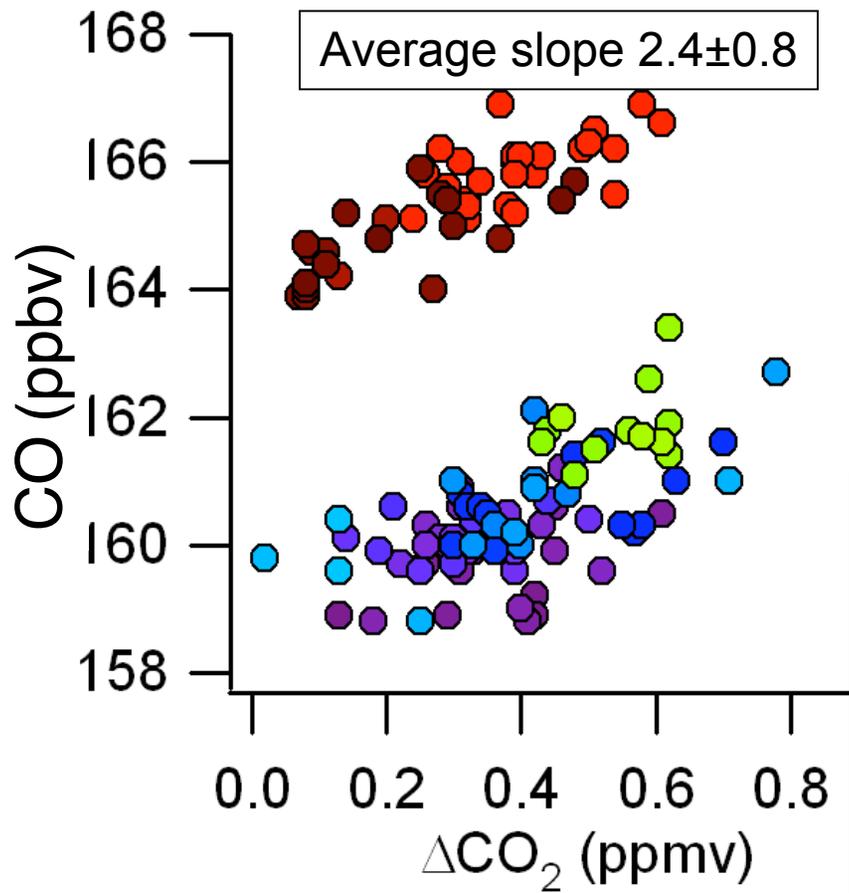




"Shelby Sea"
Oil Platform



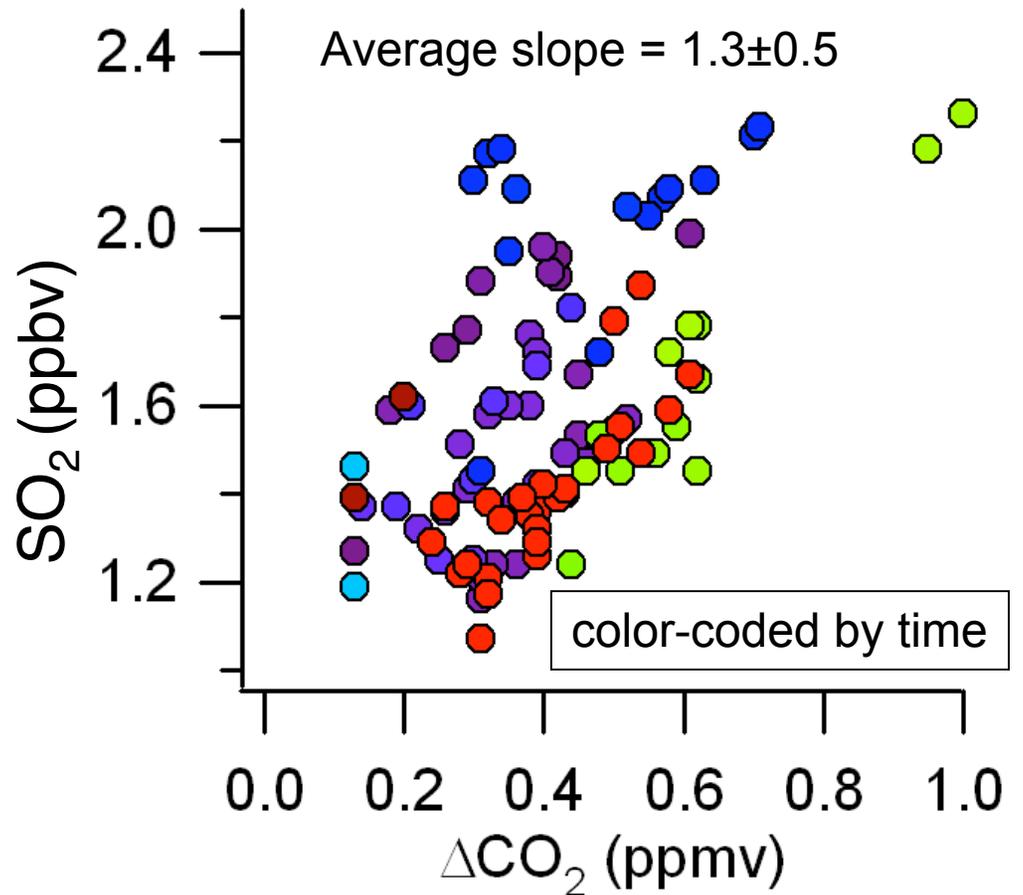
NO_x Emission factor:
 32 ± 3 g/kg



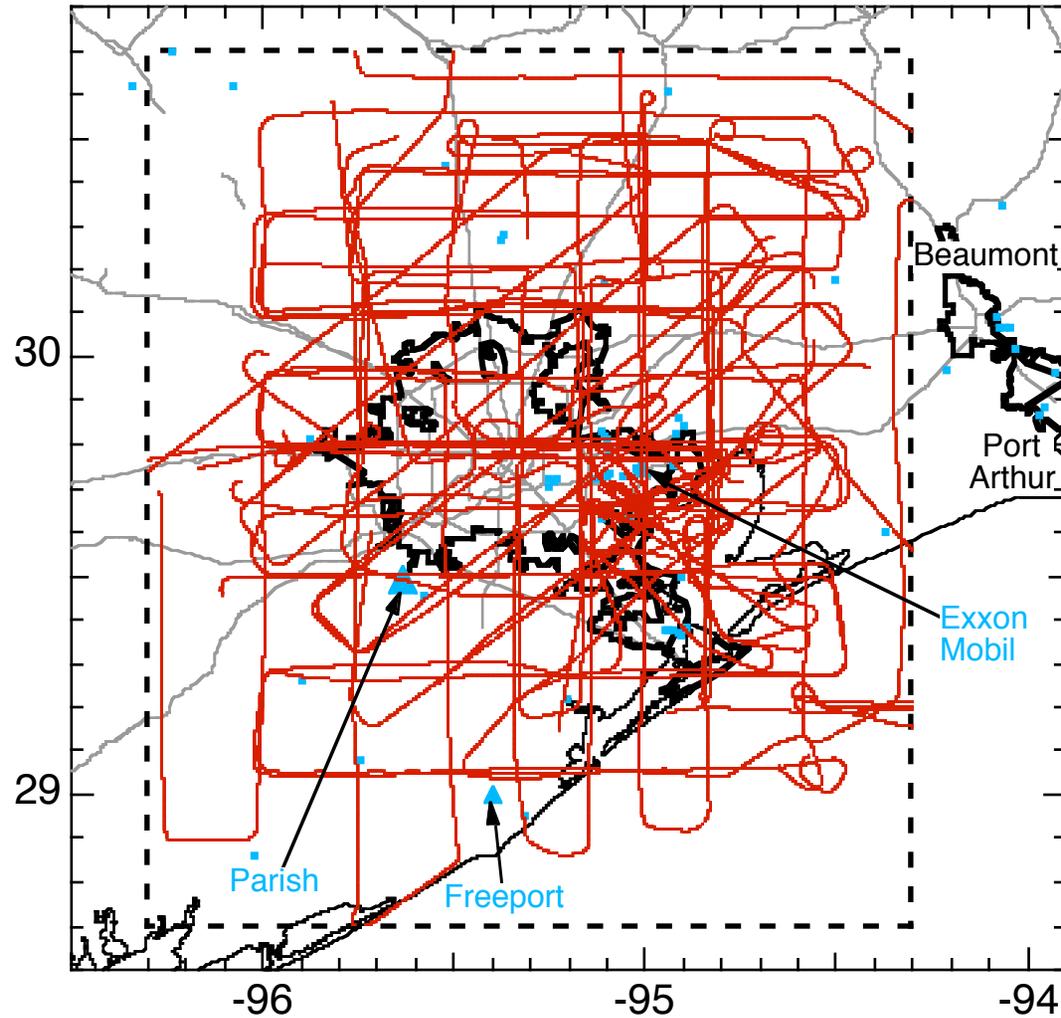
"Shelby Sea"
Oil Platform

SO₂ Emission factor:
6.0 ± 2.3 g/kg

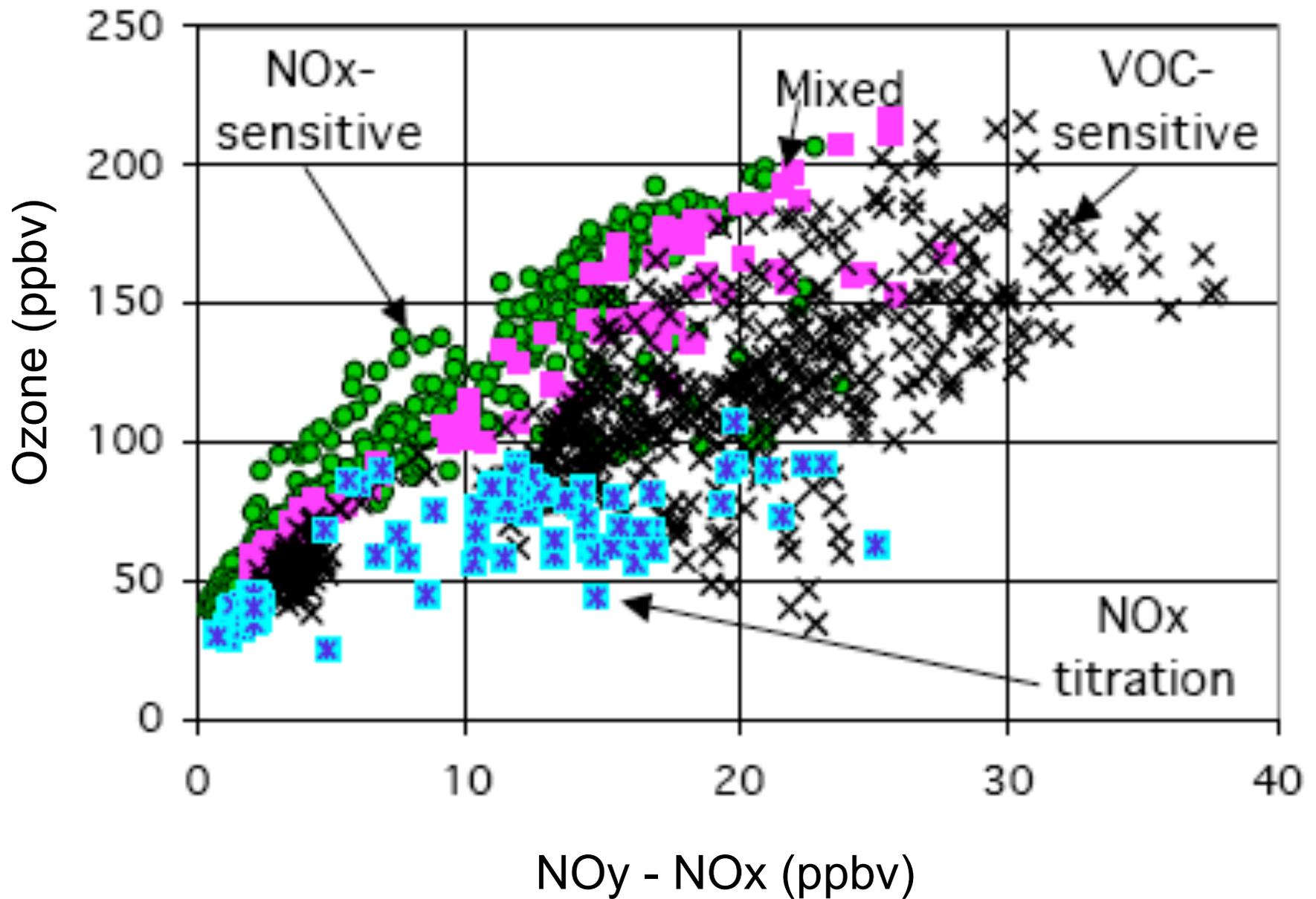
0.2% C emitted as CO



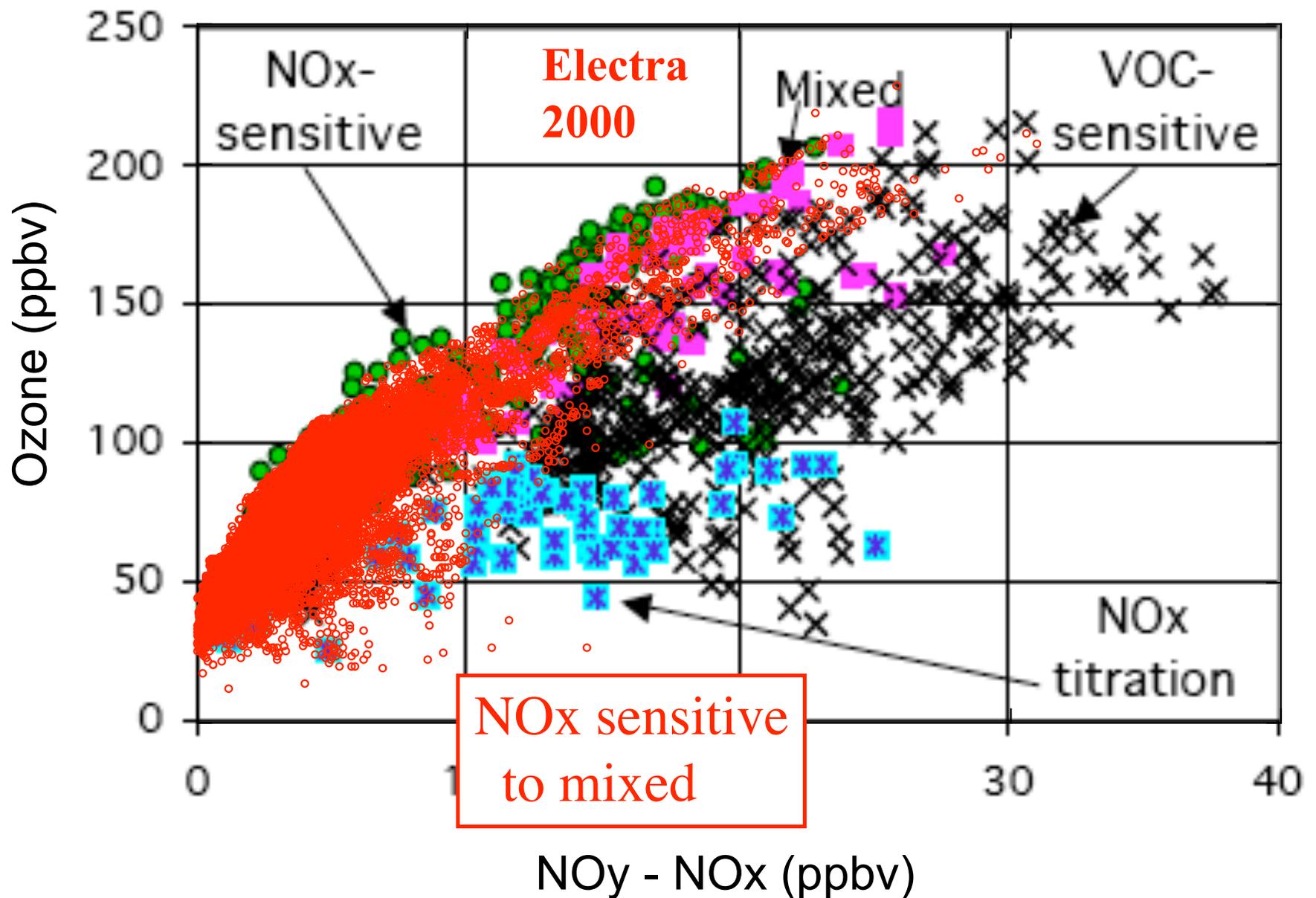
TexAQS 2000 Electra Flights



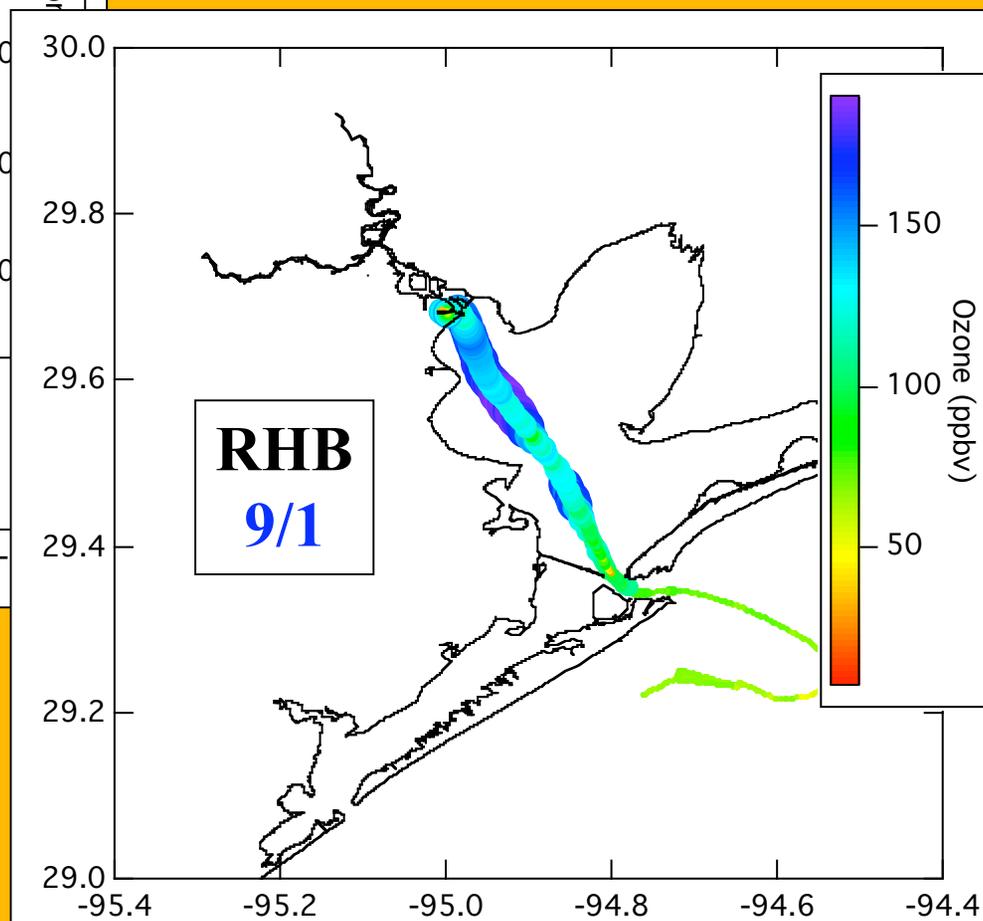
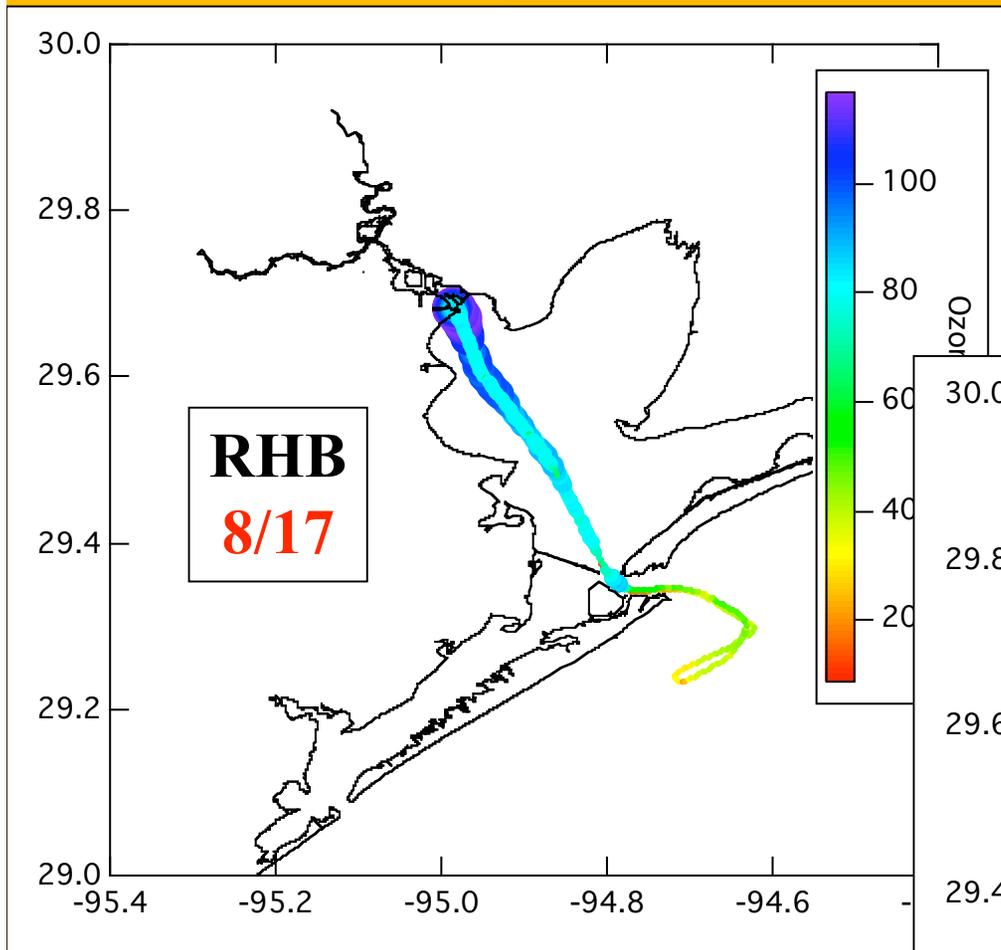
Sillman: Observation-based methods (OBMs)



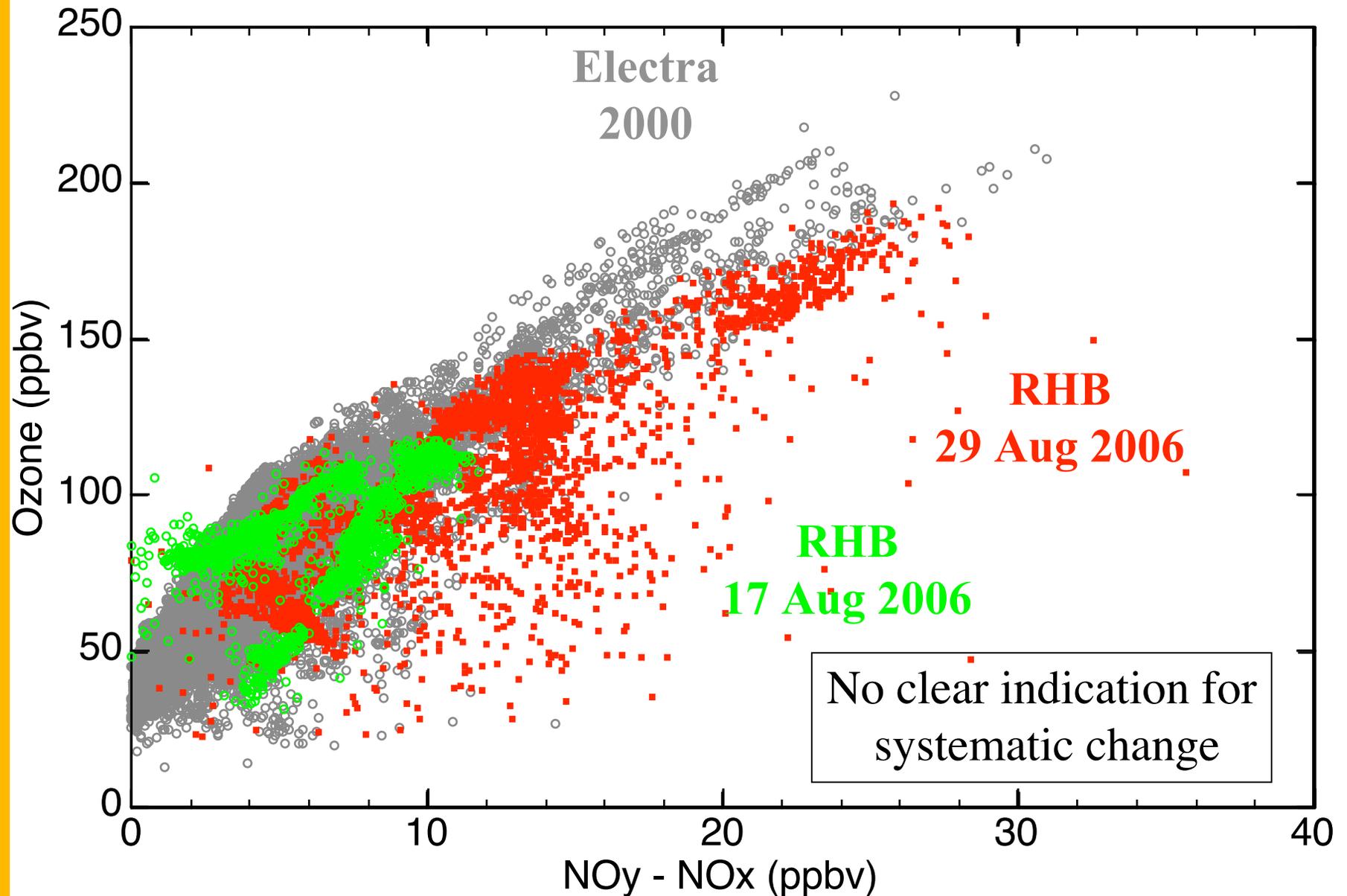
Sillman: Observation-based methods (OBMs)



TexAQS 2006 Ronald H. Brown



Ozone vs NO_y - NO_x



NOAA/Earth Systems Research Laboratory

TEXAQS 2006 Model Verification Web Page

<http://www.etl.noaa.gov/programs/2006/texaqs/verification/>

Jim Wilczak
Irina Djalalova
Stu McKeen

Posted by Stuart Stanif...

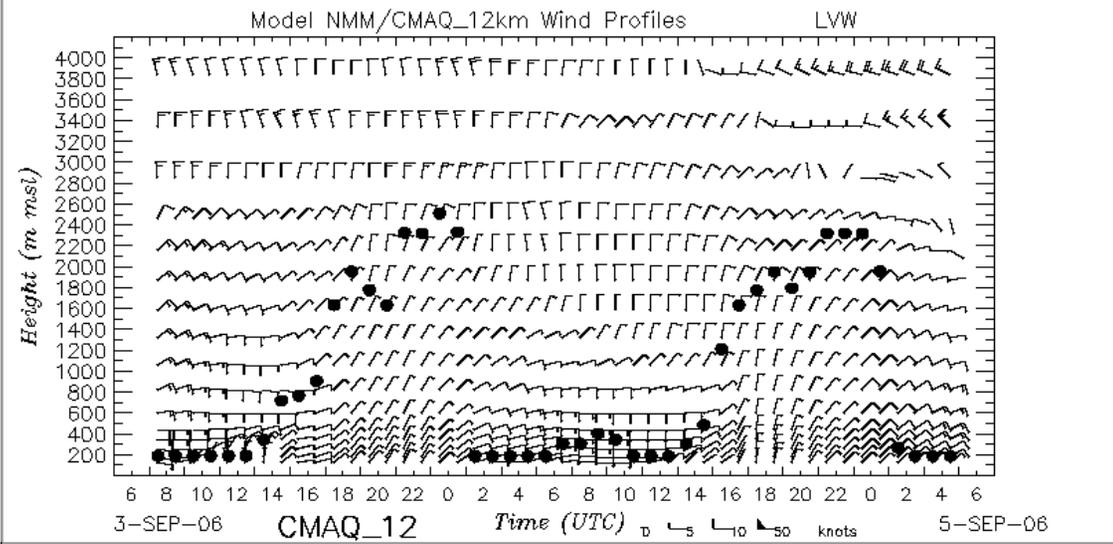
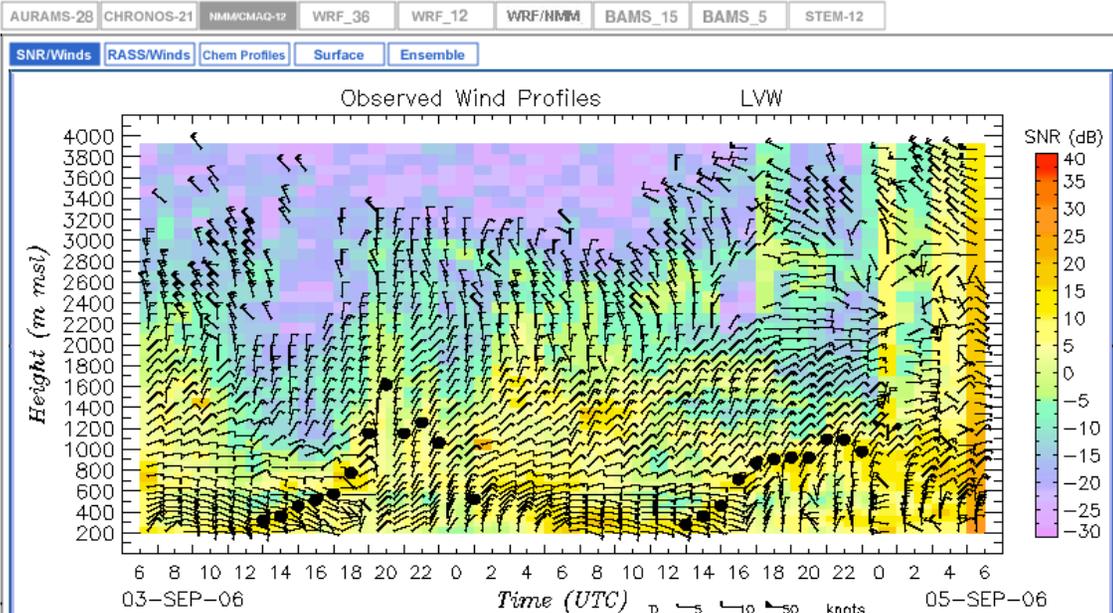
Program Links
[TEXAQS Home](#)
[Verification Page Description](#)
[Contact Us](#)

Model Cycle
Select the model cycle initialization:
06Z Sep 3

Sites
Select site type:
 Profiler
 Chemistry
Select site location:
Longview

Data Archive
Select a date:
September 2006
Sun Mon Tue Wed Thu Fri Sat
1 2
3 4 5 6 7 8 9
10 11 12 13 14 15 16
17 18 19 20 21 22 23
24 25 26 27 28 29 30

Page Updated:
Wed, 06 Sep 2006 17:29:22 GMT



NOAA
Earth System Research Laboratory
Physical Science Division (PSD)
Formerly
Environmental Technology Laboratory
325 Broadway R/ETL
Boulder, Colorado 80305-3328
www.esrl.noaa.gov/psd
[Webmaster](#) | [Info](#) | [Site Policies](#)
[Privacy Policy](#)

Done



TexAQ5 - GoMACCS

- Aeronomy Laboratory Program Site
- TexAQ5-II at University of Texas

ETL Contributions

- Flux Measurements
- Lidar Measurements
- Model Verification
- Surface Network Group

Airborne and Shipboard Lidar Contacts

- Alan Brewer
- Michael Hardesty
- Christoph Senff

Flux Measurement Contacts

- Chris Fairall

Model Verification Contacts

- Jim Wilczak

Surface Network Contacts

- Allen White

Related Programs

- NEAQ5 2004
- TexAQ5 2000

Data

- BL Profiler Network
- Model Verification
- Trajectory Tool

Navigating the NOAA/ESRL TEXAQ5-II Model Verification Web Site.

Overview:

The purpose of the NOAA/Earth Systems Research Laboratory (ESRL) TEXAQ5-II web site is to provide in real-time an evaluation of the performance of air quality models that are providing forecasts during the field program. The web site is updated on an hourly basis. As soon as a new model simulation is available, the time series of the entire simulation is plotted. Observations are then added in real-time each hourly hour.

An emphasis of the verification is to include as much information as possible on the meteorological skill of the models, as changes in the meteorology are largely responsible for the day-to-day variations in ozone and PM. A unique aspect of the evaluation is that it also includes ensemble forecasts of ozone and PM_{2.5} that are created from the mean of all of the models, as well as bias-corrected ensemble ozone and PM_{2.5} forecasts.

Models:

The choice of models is made by clicking on any of a row of grey boxes that runs across the top of the web page. At the present time, eight models are available on the web site:

- ◆ AURAMS, using GEM/ADOM-II, provided by the Meteorological Service of Canada at 28 km horizontal resolution.
- ◆ CHRONOS, using GEM/ADOM-II, also provided by the Meteorological Service of Canada, at 21 km horizontal resolution.
- ◆ NMM/CMAQ, provided by NOAA/NWS at 12 km resolution.
- ◆ WRF-36, the WRF-Chem model using ARW/RADM2, provided by NOAA/ESRL.
- ◆ WRF-12, the same model but at 12 km resolution.
- ◆ BAMS-15, using MM5/CBM-4, provided by Baron AMS at 15 km resolution.
- ◆ BAMS-5, the same model at 5 km resolution.
- ◆ STEM-12, using MM5/SAPRAC-99, provided by the University of Iowa at 12 km resolution.

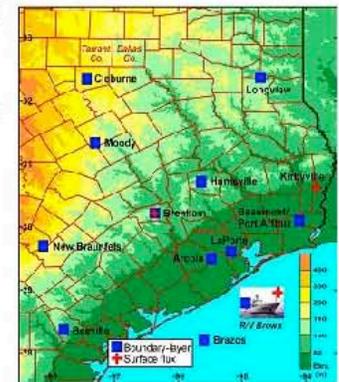
In the near future we anticipate adding a WRF simulation using NMM/RADM2, provided by NOAA/ESRL at 40 km resolution.

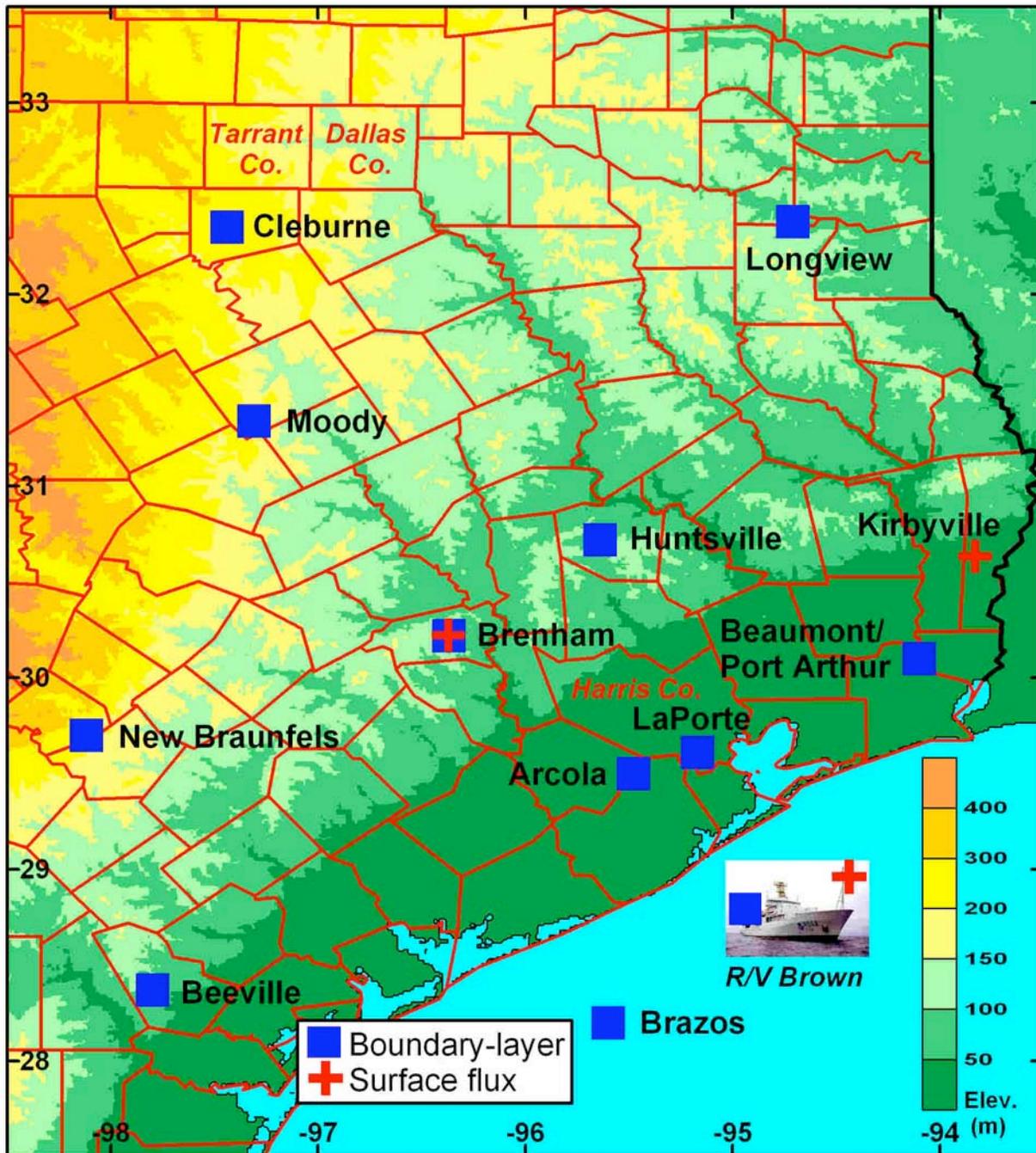
Model forecasts are initialized at different times for different models, and can be 00, 06, 12 or 18z. Some models provide one forecast per day, while others provide two, initialized at different times. After clicking on any model box at the top of the page, the available model initialization times for the model become visible in the top box on the left side of the web page. If two initialization times are visible, click on the one desired.

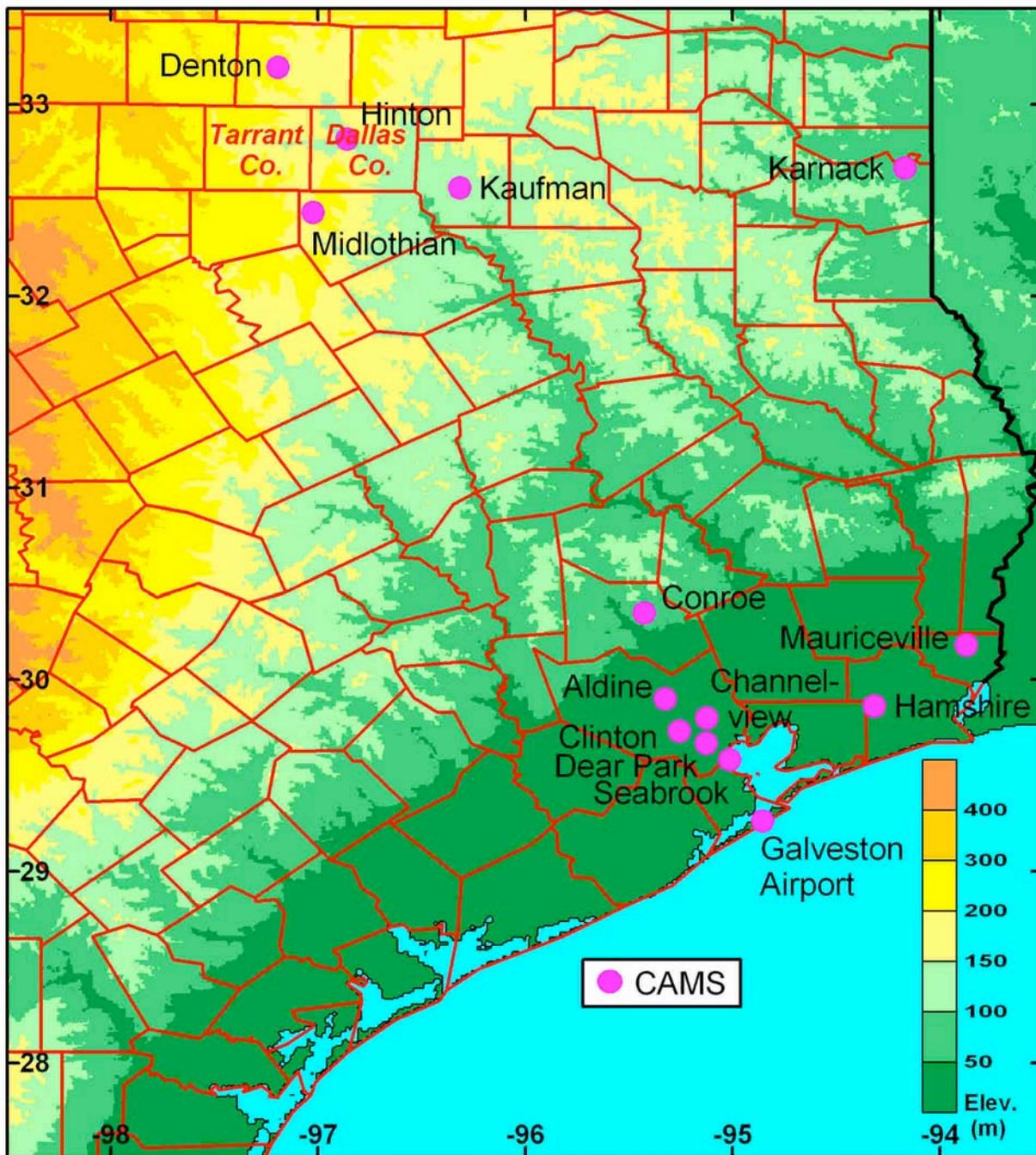
Observation Sites/Variables:

There are two distinct types of observation sites, Profiler and Chemistry. The Profiler sites focus on meteorology, with surface ozone included at a few of the sites, as well as model vertical time-height ozone cross-sections that can be compared to the profiler meteorology. The Chemistry sites focus on surface chemistry, but also include surface meteorology.

After clicking on either the Profiler or Chemistry button on the left of the page, a drop-down list of sites appears directly below. There are 11 profiler sites, and 14 Chemistry sites.







Posted by Stuart Stanif...

Program Links

[TEXAQS Home](#)
[Verification Page Description](#)
[Contact Us](#)

Model Cycle

Select the model cycle initialization:

06Z Sep 3

Sites

Select site type:

Profiler
 Chemistry

Select site location:

Longview

Data Archive

Select a date:

September 2006

Sun	Mon	Tue	Wed	Thu	Fri	Sat
				1	2	
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30

Page Updated:

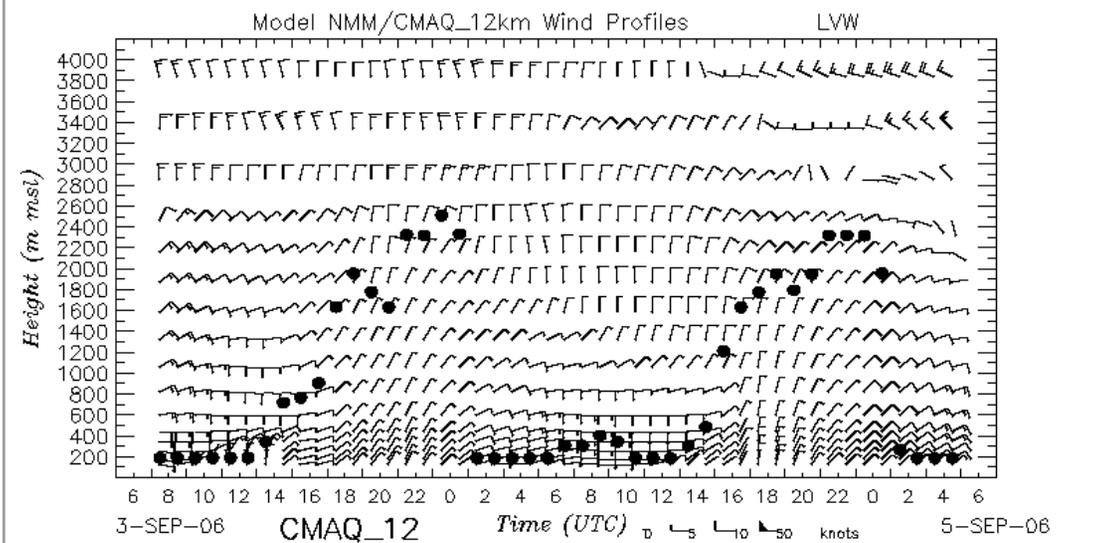
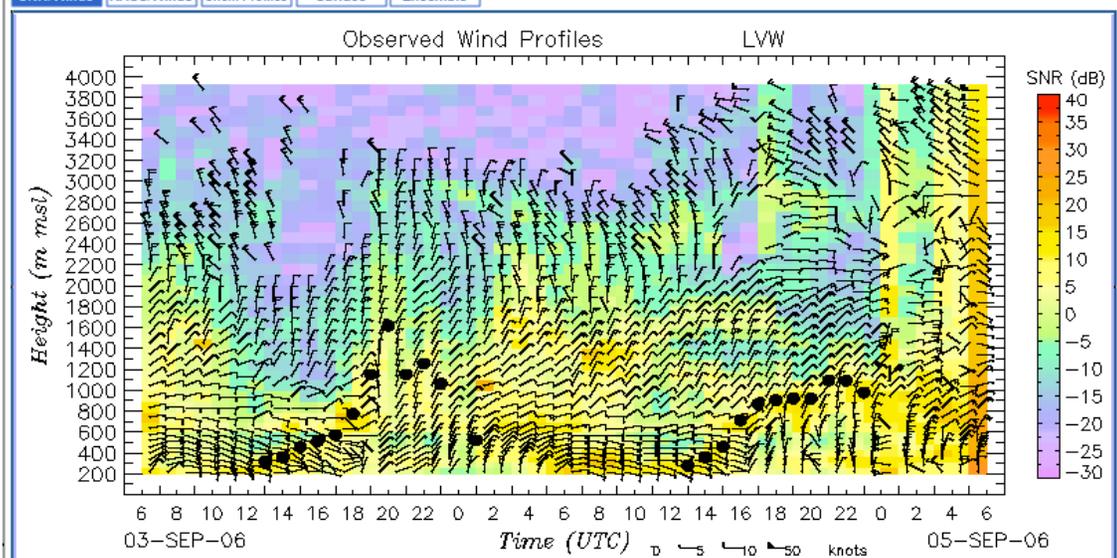
Wed, 06 Sep 2006 17:29:22 GMT

NOAA
Earth System Research Laboratory
Physical Science Division (PSD)
Formerly
Environmental Technology Laboratory
325 Broadway R/ETL
Boulder, Colorado 80305-3328
www.esrl.noaa.gov/psd

[Webmaster](#) | [Info](#) | [Site Policies](#)
[Privacy Policy](#)

AURAMS-28 CHRONOS-21 NMM/CMAQ-12 WRF_36 WRF_12 WRF/NMM BAMS_15 BAMS_5 STEM-12

SNR/Winds RASS/Winds Chem Profiles Surface Ensemble



Done

Posted by Stuart Stanif...

Program Links

TEXAQS Home
Verification Page Description
Contact Us

Model Cycle

Select the model cycle initialization:
06Z Sep 3

Sites

Select site type:
 Profiler
 Chemistry
Select site location:
Longview
Arcola
Brenham
Beaumont Port Arthur
Bravoz
Beeville
Cleburne
Huntsville
LaPorte
Longview
Moody
New Braunfels

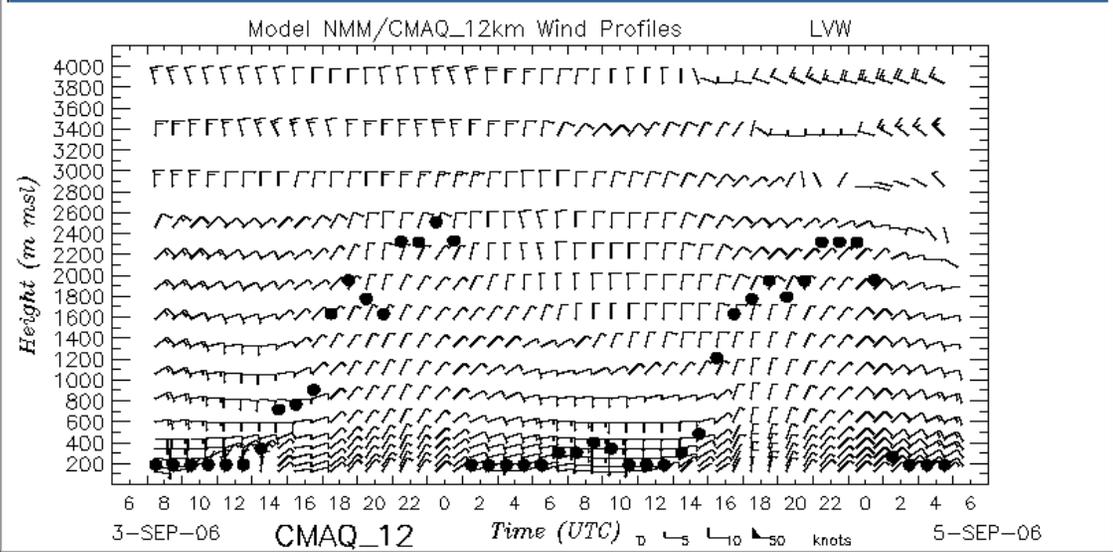
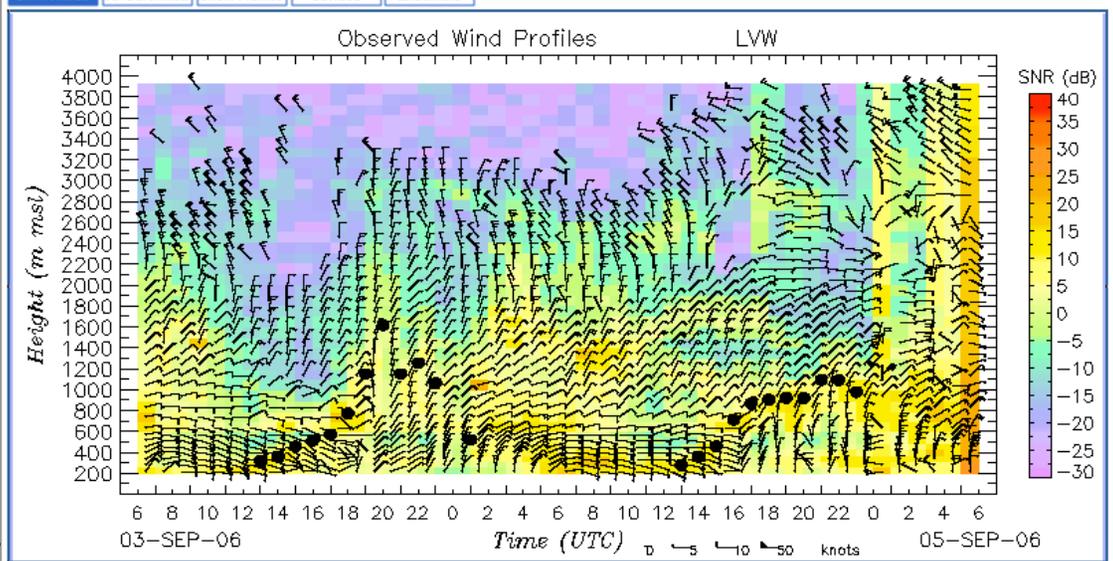
Page Updated:
Wed, 06 Sep 2006 17:37:16 GMT

NOAA
Earth System Research Laboratory
Physical Science Division (PSD)
Formerly
Environmental Technology Laboratory
325 Broadway R/ETL
Boulder, Colorado 80305-3328
www.esrl.noaa.gov/psd

Webmaster | Info | Site Policies
Privacy Policy

AURAMS-28 CHRONOS-21 NMM/CMAQ-12 WRF_36 WRF_12 WRF/NMM BAMS_15 BAMS_5 STEM-12

SNR/Winds RASS/Winds Chem Profiles Surface Ensemble



Posted by Stuart Stanif...

Program Links

TEXAQS Home
Verification Page Description
Contact Us

Model Cycle

Select the model cycle initialization:

06Z Sep 3

Sites

Select site type:

- Profiler
- Chemistry

Select site location:

Longview

Data Archive

Select a date:

September 2006						
Sun	Mon	Tue	Wed	Thu	Fri	Sat
				1	2	
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30

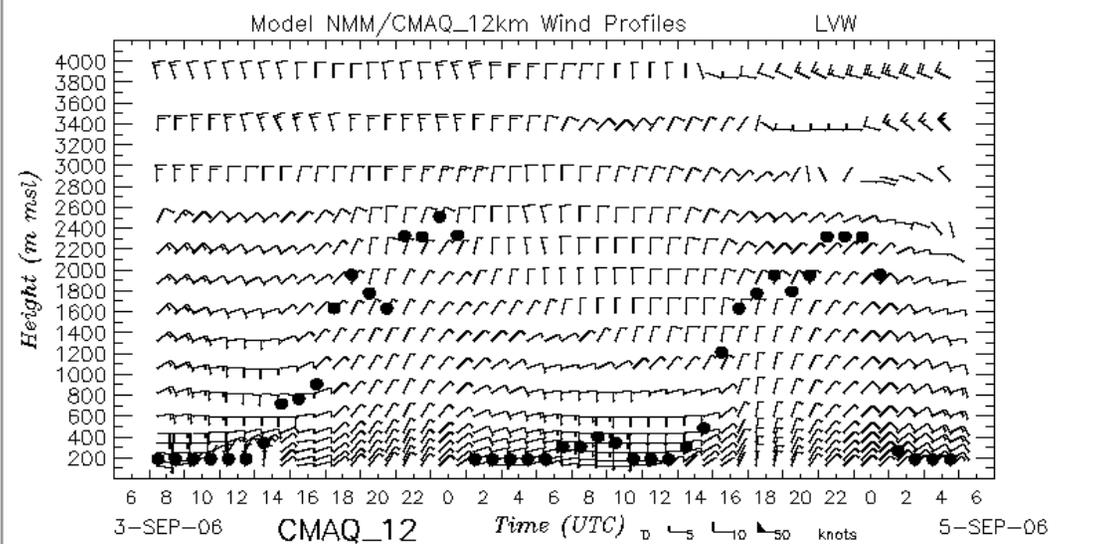
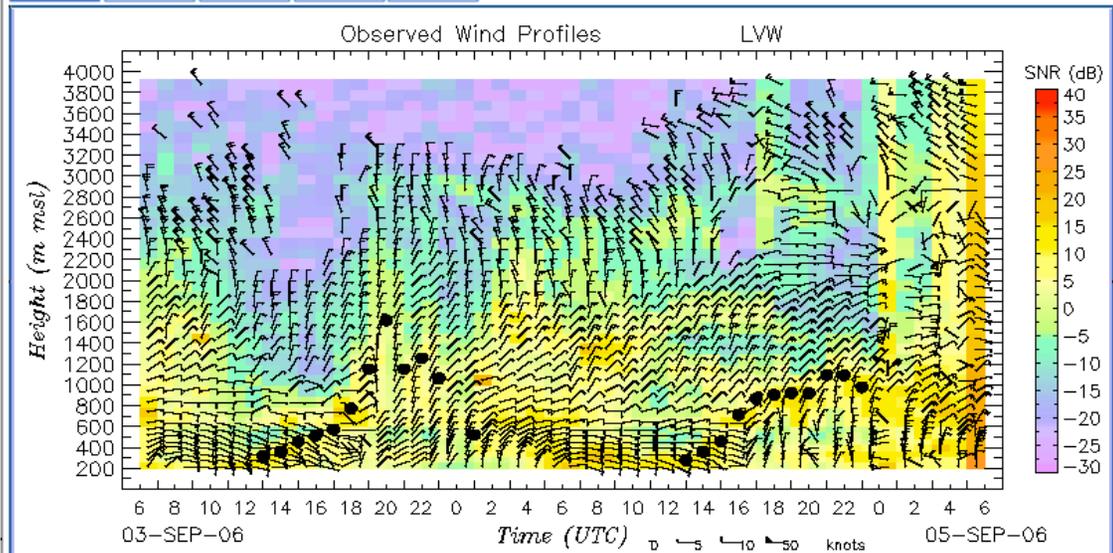
Page Updated:
Wed, 06 Sep 2006 17:29:22 GMT

NOAA
Earth System Research Laboratory
Physical Science Division (PSD)
Formerly
Environmental Technology Laboratory
325 Broadway R/ETL
Boulder, Colorado 80305-3328
www.esrl.noaa.gov/psd

Webmaster | Info | Site Policies
Privacy Policy

AURAMS-28 CHRONOS-21 NMM/CMAQ-12 WRF_36 WRF_12 WRF/NMM BAMS_15 BAMS_5 STEM-12

SNR/Winds RASS/Winds Chem Profiles Surface Ensemble



Done

Posted by Stuart Stanif...

Program Links

[TEXAQS Home](#)
[Verification Page Description](#)
[Contact Us](#)

Model Cycle

Select the model cycle

initialization:

06Z Sep 6

Sites

Select site type:

Profiler

Chemistry

Select site location:

Brenham

Data Archive

Select a date:

September 2006

Sun	Mon	Tue	Wed	Thu	Fri	Sat
				1	2	
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30

Page Updated:

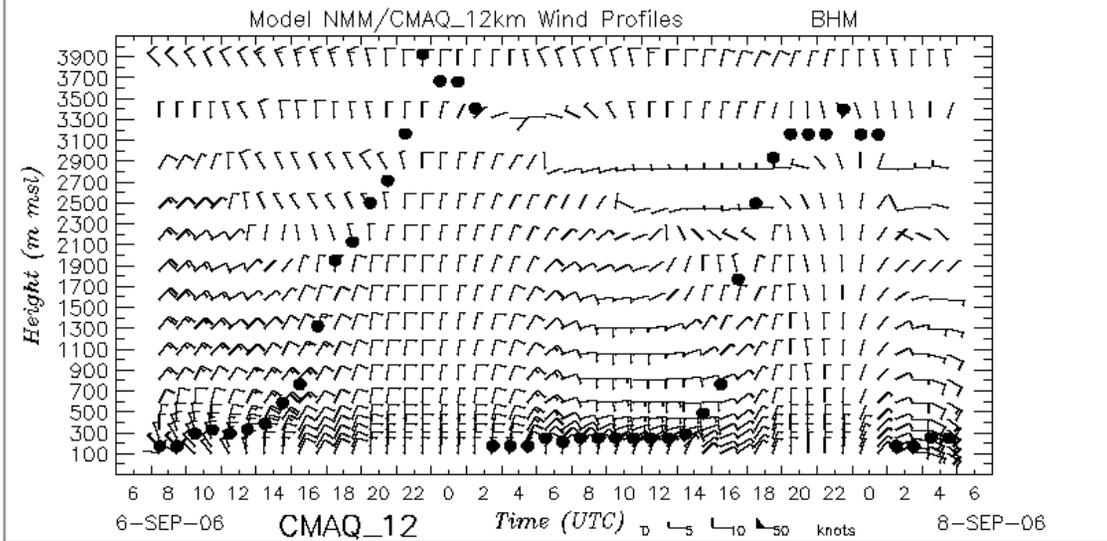
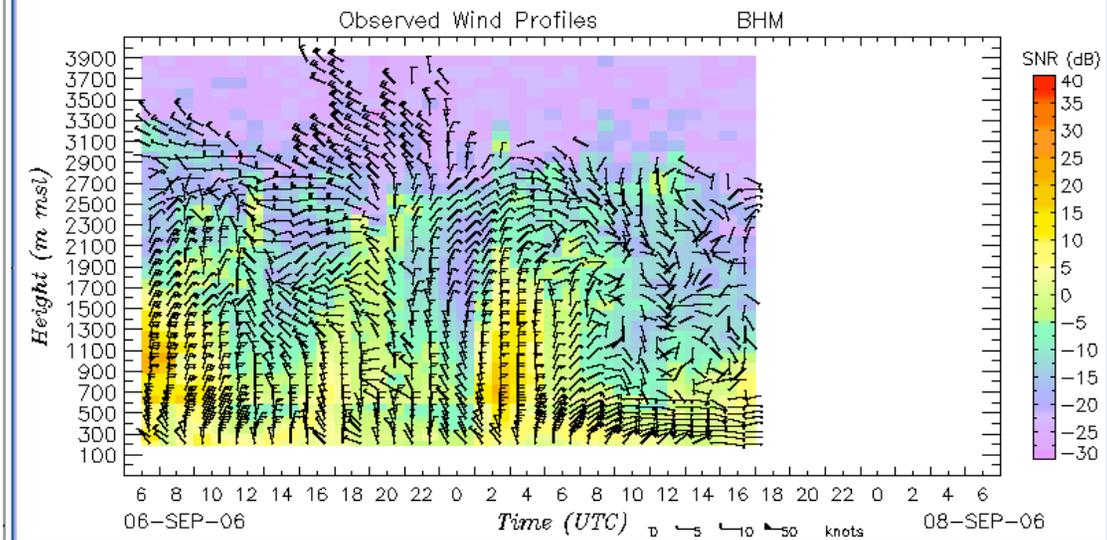
Thu, 07 Sep 2006 18:23:17 GMT

NOAA
Earth System Research Laboratory
Physical Science Division (PSD)
Formerly
Environmental Technology Laboratory
325 Broadway R/ETL
Boulder, Colorado 80305-3328
www.esrl.noaa.gov/psd

[Webmaster](#) | [Info](#) | [Site Policies](#)
[Privacy Policy](#)

AURAMS-28 CHRONOS-21 NMM/CMAQ-12 WRF_36 WRF_12 WRF/NMM BAMS_15 BAMS_5 STEM-12

SNR/Winds RASS/Winds Chem Profiles Surface



Done

Posted by Stuart Stanif...

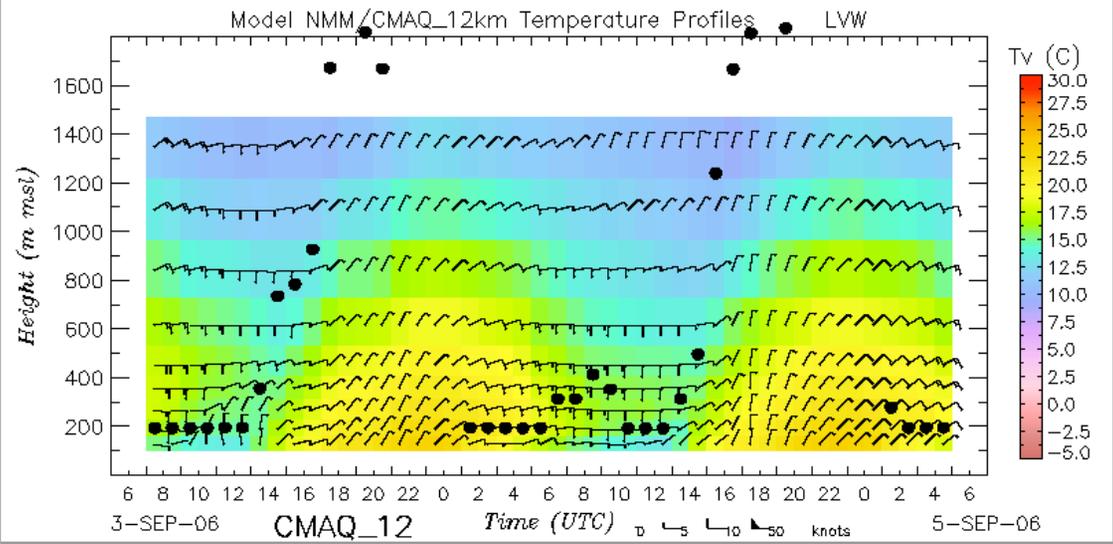
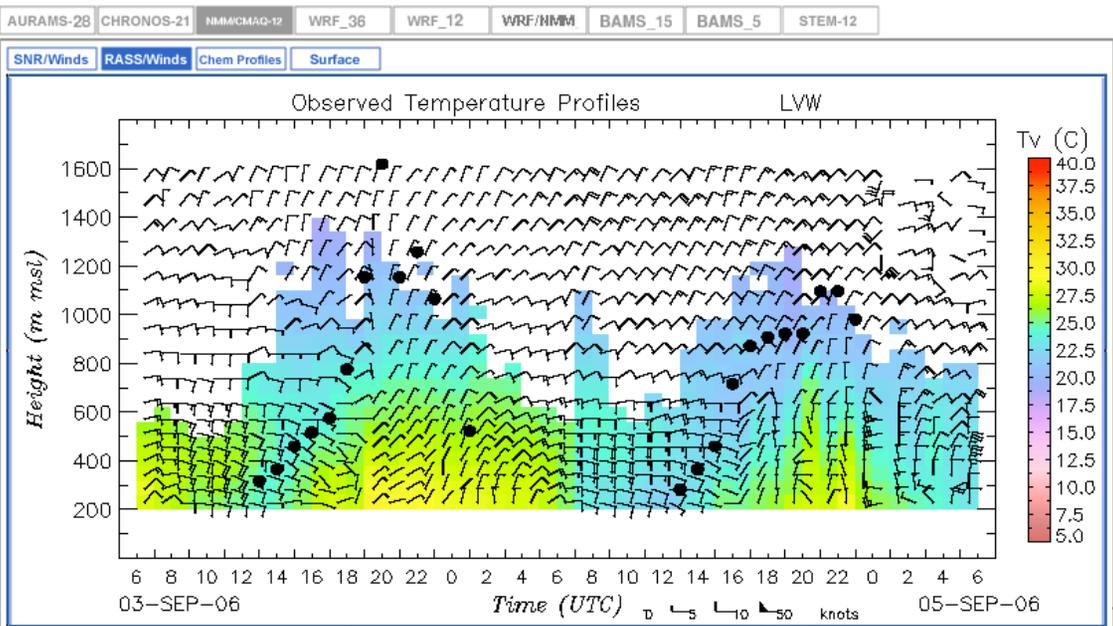
Program Links
[TEXAQS Home](#)
[Verification Page Description](#)
[Contact Us](#)

Model Cycle
Select the model cycle initialization:

Sites
Select site type:
 Profiler
 Chemistry
Select site location:

Data Archive
Select a date:
September 2006
Sun Mon Tue Wed Thu Fri Sat
1 2
3 4 5 6 7 8 9
10 11 12 13 14 15 16
17 18 19 20 21 22 23
24 25 26 27 28 29 30

Page Updated:
Wed, 06 Sep 2006 17:43:11 GMT



NOAA
Earth System Research Laboratory
Physical Science Division (PSD)
Formerly
Environmental Technology Laboratory
325 Broadway R/ETL
Boulder, Colorado 80305-3328
www.esrl.noaa.gov/psd

[Webmaster](#) | [Info](#) | [Site Policies](#)
[Privacy Policy](#)

Posted by Stuart Stanif...



Quick Links

Program Links

TEXAQS Home
Verification Page Description
Contact Us

Model Cycle

Select the model cycle
initialization:
00Z Sep 3
12Z Sep 3

Sites

Select site type:

- Profiler
Chemistry

Select site location:

Longview

Data Archive

Select a date:

September 2006

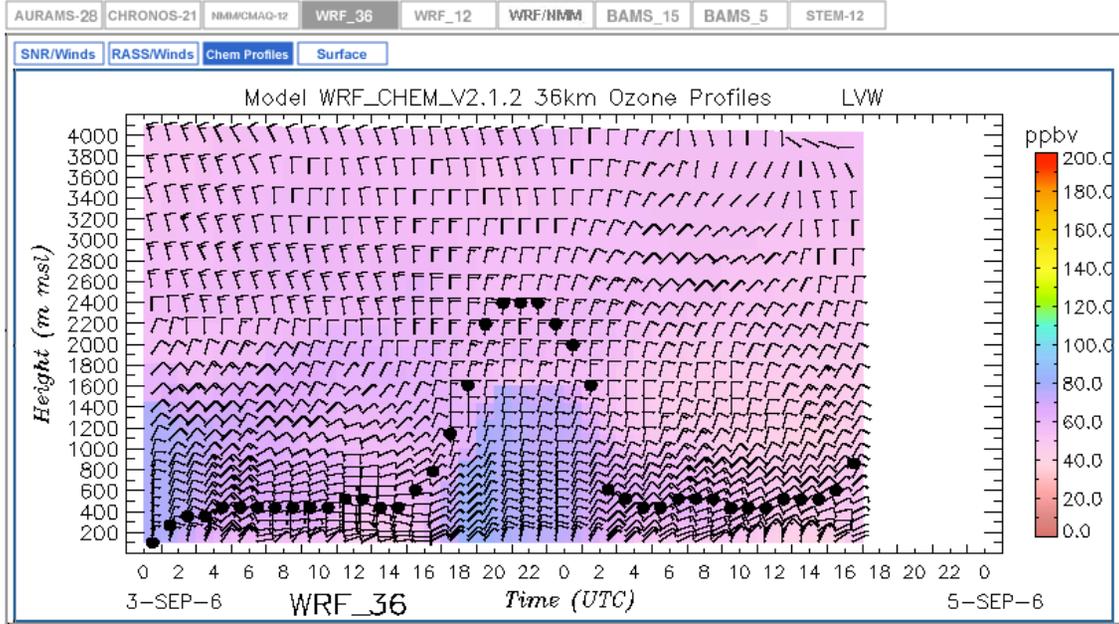
Calendar grid for September 2006 with date 3 highlighted.

Page Updated:

Wed, 06 Sep 2006 17:49:07 GMT

NOAA Earth System Research Laboratory Physical Science Division (PSD) Formerly Environmental Technology Laboratory 325 Broadway R/ETL Boulder, Colorado 80305-3328 www.esrl.noaa.gov/psd

Webmaster | Info | Site Policies Privacy Policy



Done

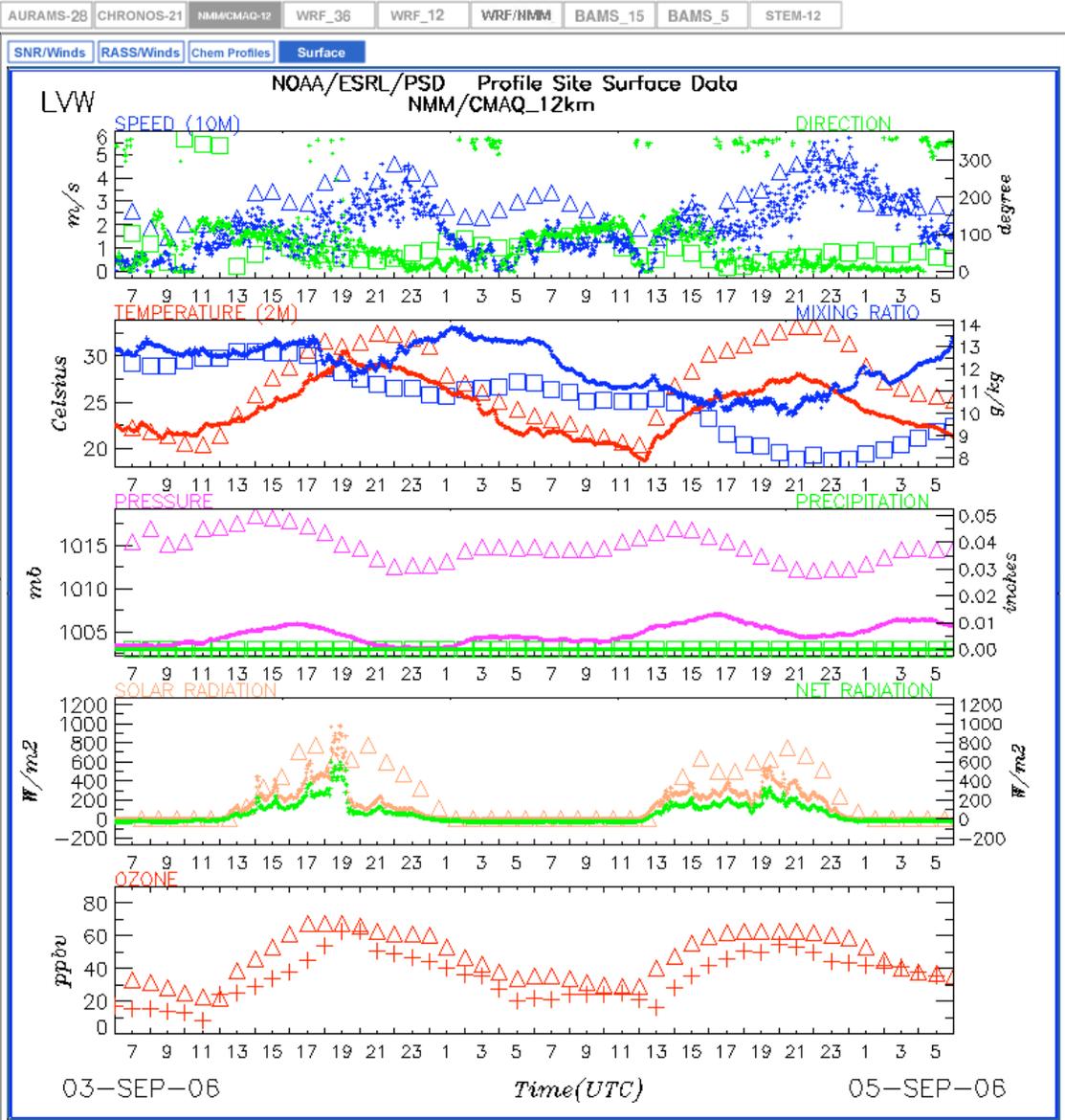
Posted by Stuart Stanif...

Program Links
TEXAQS Home
Verification Page Description
Contact Us

Model Cycle
Select the model cycle initialization:
06Z Sep 3

Sites
Select site type:
 Profiler
 Chemistry
Select site location:
Longview

Data Archive
Select a date:
September 2006
Sun Mon Tue Wed Thu Fri Sat
3 4 5 6 7 8 9
10 11 12 13 14 15 16
17 18 19 20 21 22 23
24 25 26 27 28 29 30
Page Updated:
Wed, 06 Sep 2006 17:53:48 GMT



Posted by Stuart Stanif...

Program Links

TEXAQS Home
Verification Page Description
Contact Us

Model Cycle

Select the model cycle initialization:

- 00Z Sep 3
- 12Z Sep 3

Sites

Select site type:

- Profiler
- Chemistry

Select site location:

Mauriceville (Beaumont)

Data Archive

Select a date:

< September 2006

Sun	Mon	Tue	Wed	Thu	Fri	Sat
				1	2	
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30

Page Updated:

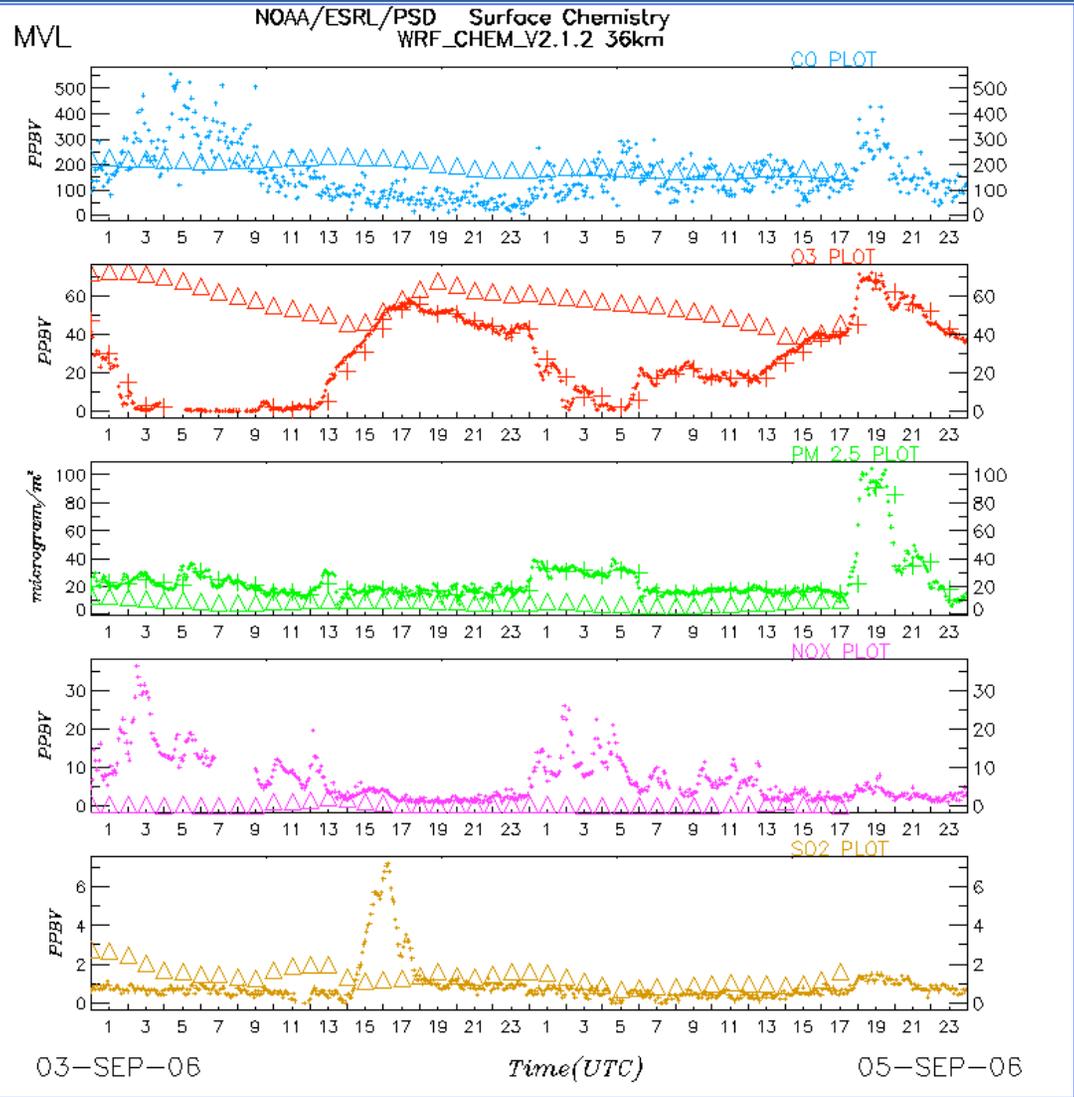
Wed, 06 Sep 2006 18:02:43 GMT

NOAA
Earth System Research Laboratory
Physical Science Division (PSD)
Formerly
Environmental Technology Laboratory
325 Broadway R/ETL
Boulder, Colorado 80305-3328
www.esrl.noaa.gov/psd

Webmaster | Info | Site Policies
Privacy Policy

AURAMS-28 CHRONOS-21 NMM/CMAQ-12 WRF_36 WRF_12 WRF/HMM BAMS_15 BAMS_5 STEM-12

Det/Met Det/Chem Ens_Ozone Ens_PM2.5



Done



- james.m.wilczak...
- 5 Windows E...
- Inbox for James...
- 5 Firefox
- 2 Microsoft Of...
- Microsoft Power...

Posted by Stuart Stanif...

Program Links
TEXAQS Home
Verification Page Description
Contact Us

Model Cycle
Select the model cycle initialization:
00Z Sep 3
12Z Sep 3

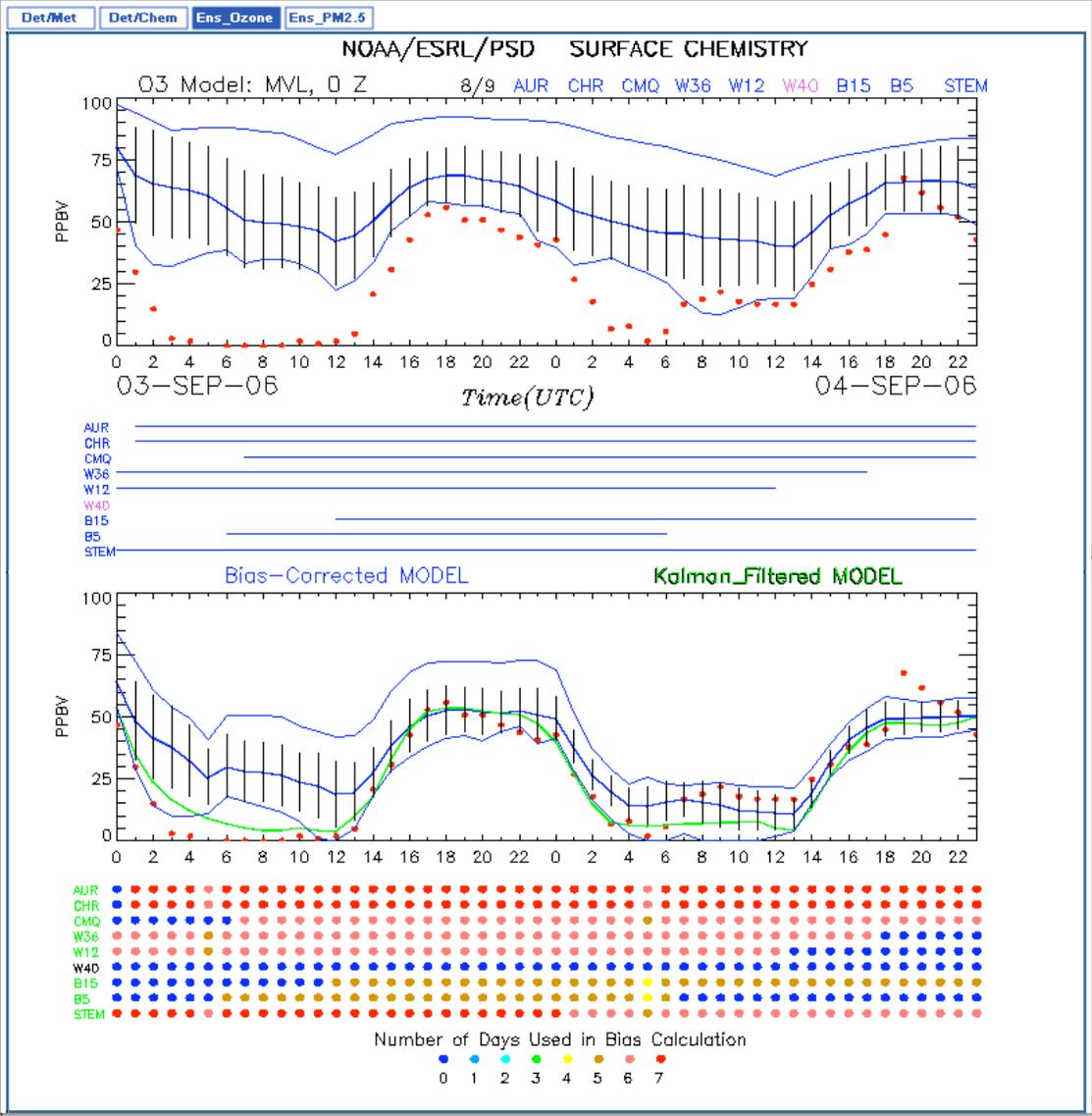
Sites
Select site type:
Profiler
Chemistry
Select site location:
Mauriceville (Beaumont)

Data Archive
Select a date:
September 2006
Calendar grid showing dates from 3 to 30.

Page Updated:
Wed, 06 Sep 2006 20:45:46 GMT

NOAA
Earth System Research Laboratory
Physical Science Division (PSD)
Formerly
Environmental Technology Laboratory
325 Broadway R/ETL
Boulder, Colorado 80305-3328
www.esrl.noaa.gov/psd
Webmaster | Info | Site Policies
Privacy Policy

AURAMS-28 CHRONOS-21 NMM/CMAQ-12 WRF_36 WRF_12 WRF/NMM BAMS_15 BAMS_5 STEM-12



Posted by Stuart Stanif...

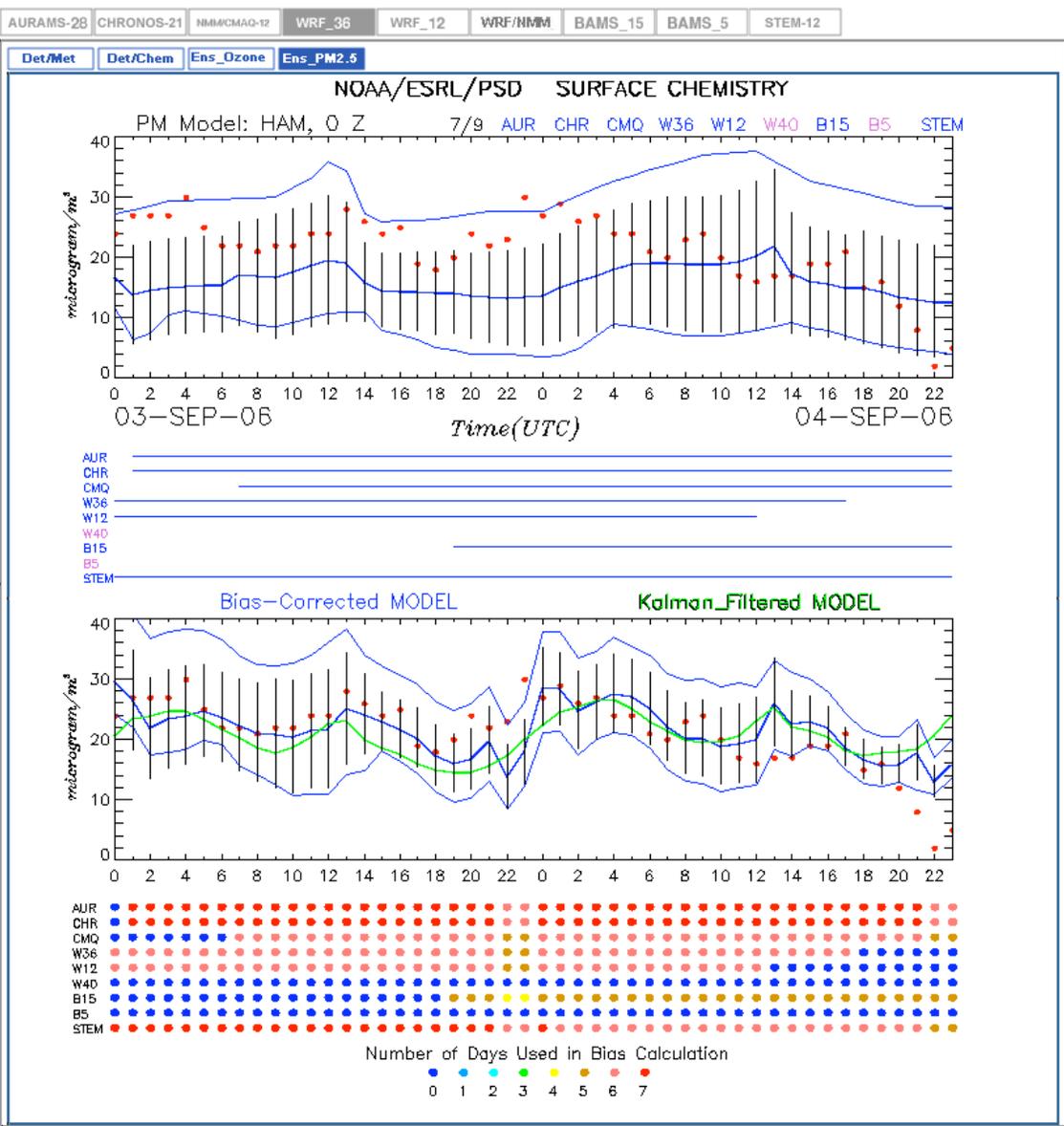
Program Links
[TEXAQS Home](#)
[Verification Page Description](#)
[Contact Us](#)

Model Cycle
 Select the model cycle initialization:

Sites
 Select site type:
 Profiler
 Chemistry
 Select site location:

Data Archive
 Select a date:
September 2006
 Sun Mon Tue Wed Thu Fri Sat
 1 2
3 4 5 6 7 8 9
 10 11 12 13 14 15 16
 17 18 19 20 21 22 23
 24 25 26 27 28 29 30

Page Updated:
Wed, 06 Sep 2006 20:54:01 GMT



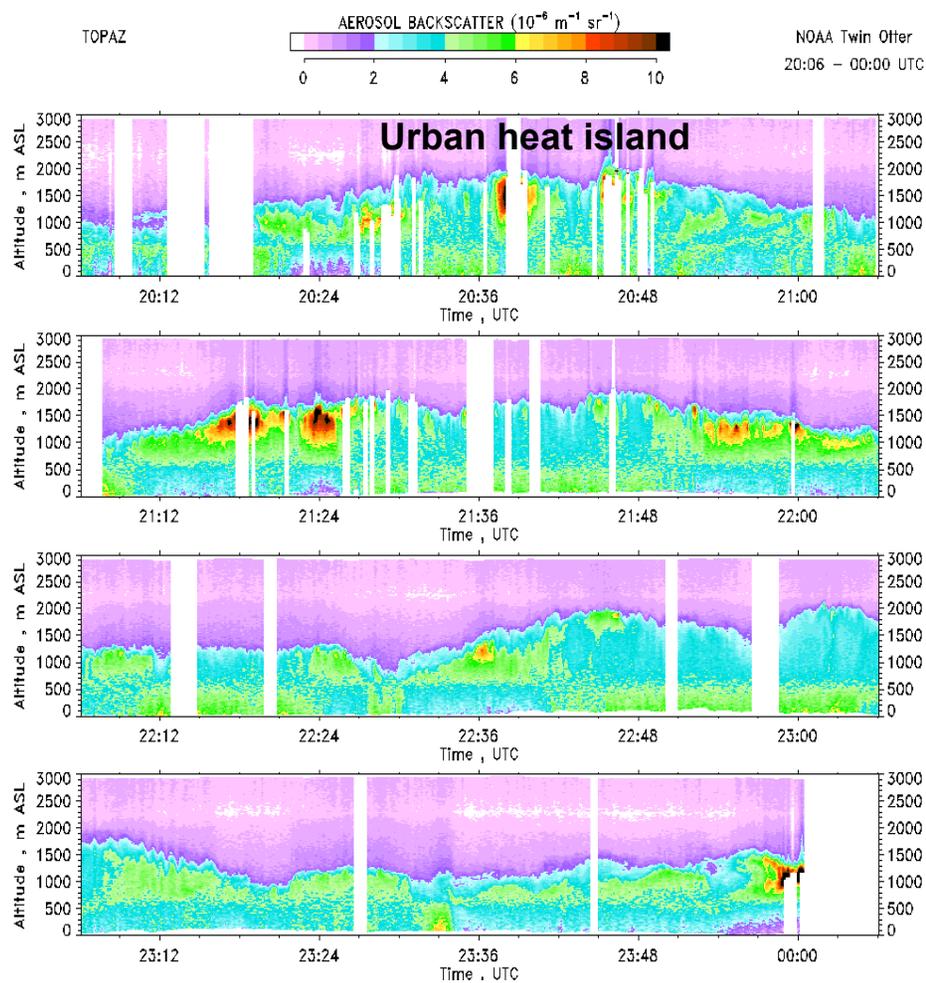
NOAA
 Earth System Research Laboratory
 Physical Science Division (PSD)
 Formerly
 Environmental Technology Laboratory
 325 Broadway R/ETL
 Boulder, Colorado 80305-3328
www.esrl.noaa.gov/psd
[Webmaster](#) | [Info](#) | [Site Policies](#)
[Privacy Policy](#)

Relationship between mixing layer depth and ozone concentrations

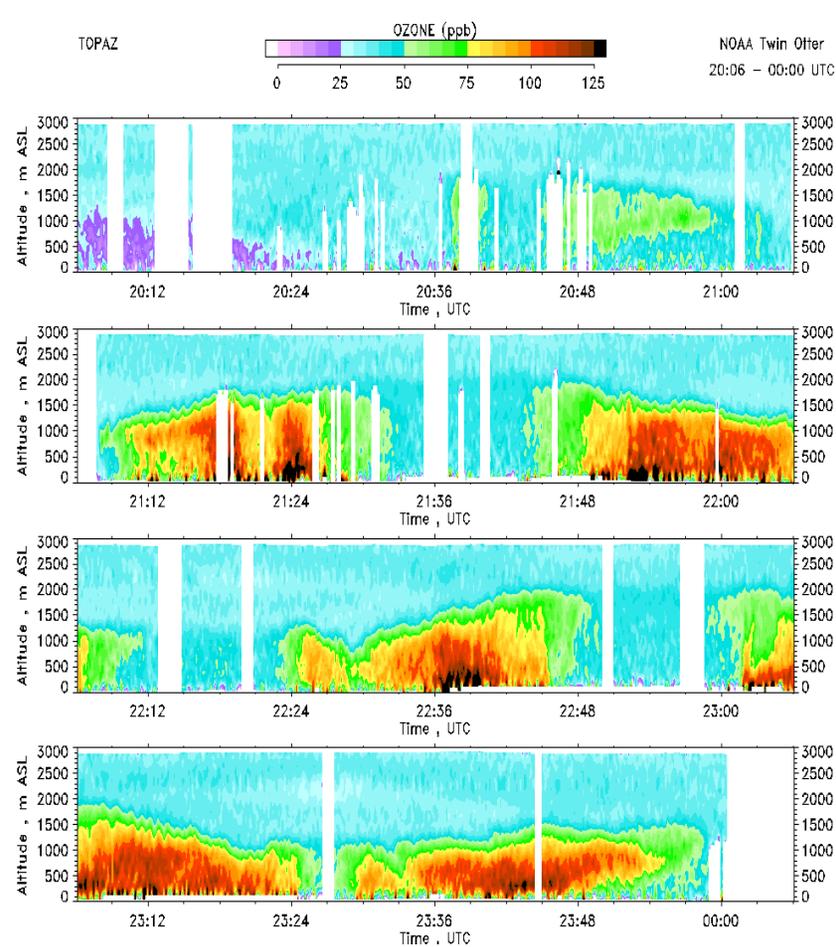
- Question: What is the correlation between mixing layer depth and ozone concentration?
- One might expect that a deeper mixing layer depth would be associated with reduced ozone concentrations due to dilution
- However, main sources of ozone precursors are not always associated with deepest mixing layer (e.g., ship channel)
- Transport of precursors into shallow boundary layer (e.g., over Galveston Bay) can enhance concentrations
- Airborne ozone lidar data provides data set for investigation of mixing layer depth/ ozone concentration correlations

August 14 Aerosol Backscatter and Ozone

14/15 AUG 2006



14/15 AUG 2006

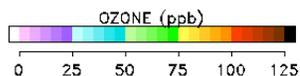


August 14

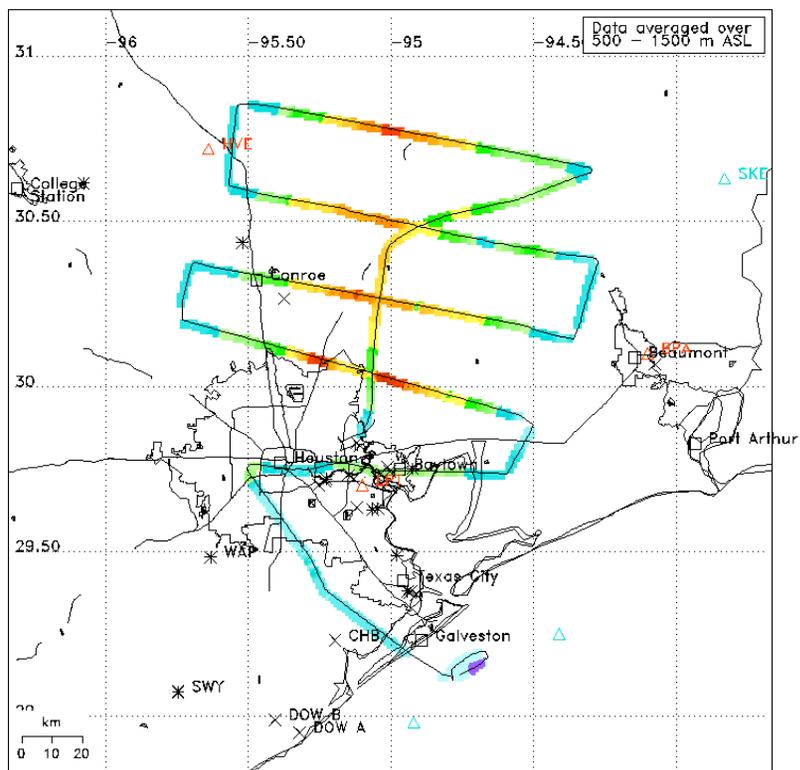
Ozone

TEXAQS 14 AUG 2006

TOPAZ



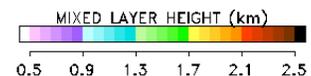
NOAA Twin Otter
20:06 - 00:00 UTC



Mixed layer height

TEXAQS 14 AUG 2006

Airborne Lidar



NOAA Twin Otter
14:06 - 18:00 CST

